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PAPER TRADE JOURNAL

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May 31, 1945

K. V. P. CO. to Convert Former Abitibi Plant

Work To Be Speeded In Enlarging and Modernizing Mill At Espanola, Ont., At A Total Estimated Cost of $8,000,000—Production Is Expected To Start July 1—Plan To Reduce Timber Losses.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 28, 1945—Major construction work was recently started by the Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich., on its Espanola, Ont., plant, 30 miles west of Sudbury. The property formerly belonged to the Abitibi Power and Paper Company and was acquired by the Michigan organization two years ago for a sum said to be $1,000,000.

Some demolition and construction work was begun last year and now with these preliminaries out of the way, the company is going to work in earnest to convert and enlarge the property to suit the new requirements. The Kalamazoo Parchment Company will invest about $5,000,000 in building and equipping a 200-ton bleached sulphate mill, complete with wood room, boiler house and water filtration plant. Existing buildings will accommodate screens and bleaching plant.

In the rebuilt former power house are being installed a new vertical electrical generator and an electrolytic plant for production of chlorine and caustic. The company is providing $2,000,000 for woods equipment and working capital, making a total project of $8,000,000, according to President R. A. Hayward. Dalton Engineering and Construction Company, of Toronto, with the personal services of Peter D. Dalton for supervision of the job, have been given the contract.

The company plans to start mill production about July 1, 1946, with full capacity of 200 tons a day the immediate goal. Total output will be shipped for processing into paper at the Kalamazoo plant, leaving none for sale. Management and operating personnel will be all Canadians except two or three key men, moving from Kalamazoo. A start on accumulating operating crews is scheduled for January. Woods organization, already at work, is almost complete, but the company is employing some additional men as rapidly as possible. It is understood Mr. Hayward will be president of the new Canadian subsidiary when it is formed.

Plan to Combat Timber Losses

Some idea of the importance of insect control over Canada's forests may be gained from the fact that rough calculations indicate that in the last 40 years insect and fire losses amounted to a 45 years' supply of pulpwood or a total loss in revenue of $45,000,000,000. Losses from insect destruction are calculated at 16% of the total depletion each year, according to Forests and Forest Industries of Canada (1943).

Treatment of tree diseases, which may be of fungus or insect origin, requires highly specialized training and has been largely assumed by the Dominion Department of Agriculture, with Provincial authorities cooperating, chiefly through rangers reporting infestations. Canada's campaign against the spruce budworm is better organized this year than formerly. It comprises four main activities: Biological and ecological studies; forest management as a means of prevention; collection, propagation and distribution of counter-parasites; experiments in chemical control.

Biological research has been going on in Northern Ontario for a number of years under the direction of Dr. C. E. Atwood and it is planned to extend the program.

Counter-parasites will be collected in British Columbia and propagated at the Ontario provincial parasite laboratory at Belleville. In addition to the experimental spraying operations in the Algonquin Park area of Ontario using DDT, as reported in a previous issue, three distinct co-operative operations have been planned. Preliminary tests of the effectiveness of various dosages are being made on six 10-acre plots. A somewhat larger and more elaborate series of experiments on about 2,000 acres will be undertaken in the Kabonga region of Quebec province. At the same time an area of from 5,000 to 7,000 acres will be treated experimentally in the Nipigon region of Ontario. The Dominion Department of Agriculture, the Provincial Forests Services of Ontario and Quebec and the United States Bureau of Entomology are all co-operating in the work.

In addition to all this the Research Division of the Ontario Department of Lands and Forests, in co-operation with the Royal Canadian Air Force, will conduct an experiment on a commercial scale by the spraying of 80,000 acres in the Lake Nipigon area with the other agencies acting in an advisory capacity. In a recent radio address W. G. Thompson, Minister of Lands and Forests in the Ontario government, said this aerial spraying project was the largest of its type in the world.

The Ontario government is erecting a modern laboratory at Sault Ste. Marie, Ont., at a cost of $250,000 and the Dominion government will supply the scientists to staff the building. In addition, the Ontario government has arranged for the appointment

(Continued on page 20)

State Bill Would Set Up Conservation Act

Proposal Affects Private and Public Forest Lands and Regulates Cutting of Immature Timber—Northwestern Superintendents Confer On June 1—Paper Institute Meets—Name Scholarship Winners.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 28, 1945—Appearing last Thursday, May 24, at a state senate committee hearing on a bill that would set up a forest conservation act and regulate cutting of immature timber, E. B. Hurst of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., called the measure a step in the right direction.

The bill, introduced at the request of the Wisconsin State Conservation department, would affect private as well as public lands. Opponents assailed it as a bill that would confiscate private property, while its advocates said that it was needed to conserve the state's forest resources.

A substitute amendment to the bill, introduced by State Senator Laird of Marshfield, also was up for hearing. This would provide only that a committee of eight men be appointed by the commission to study the forest cutting program and report to the next session of the legislature. Senator Laird led the opposition to the original bill. He called it "dictatorial and arbitrary and provided for legislation that is unfair and unjust."

W. J. P. Aberg, commission chairman, in support of the measure, said that it was needed to conserve the natural resources of the state and would prevent indiscriminate cutting of immature land. He said the bill contained no "bugaboos" such as described by Senator Laird and would not affect cutting of mature timber. He declared the amendment was not needed and had no bearing on the bill.

Northwestern Superintendents Meet June 1

Initial plans for the Northwestern division of the Pulp and Papermakers Superintendents Association meeting June 1 have been announced by L. J. Smith, superintendent of Combined Locks Paper Company and vice chairman of the division and chairman of the meeting.

Registration will be held at the Conway hotel, Appleton, from 8:30 to 10 o'clock in the morning, and the meeting will begin at 10 o'clock. Speakers from the United States Forest Products Laboratory, Madison, Wis., and other members of the association will discuss "The Greater Use of Poplar for Making Pulp."

Luncheon will be at the Conway hotel and golf will follow at the North Shore Golf Club. A banquet and a dance will be held in the evening at North Shore.

Announce Forest Scholarship Winners

Trees for Tomorrow, Inc., on Friday, May 25, announced the five winners of a $2,500 forestry scholarship contest. They are:

Robert Wolf, Arbor Vitae-Woodruff; John Marcouiller, Merrill; Harold Berndt, Wausau; Herman A. Meyer, Nekoosa, and John Krause, Pittsville. Competition was restricted to Wisconsin River Valley communities. The winners may specialize in any phase of forestry and may attend any of 27 accredited forestry schools in the nation.

Students in 29 high schools participated. Two alternates were named in each of five districts. The candidates were judged on a point system from an entry blank worked out in cooperation with the Wisconsin State Conservation Department, an essay and personal interviews.

Dr. Graham Addresses Paper Men

Dr. J. Clark Graham, dean of Ripon College, Ripon, Wis., addressed an audience of 80 executives, foremen, superintendents, office supervisors and union labor officials at the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., last Tuesday, May 22. He was introduced by C. E. Jackson, mill manager of the Wisconsin Rapids division.

Dr. Graham said that after the war this country will see prosperity, but it will be up to the people whether it shall preserve its moral strength as a nation and as individuals, or forget the human attributes and head for destruction. "The destruction of a nation or an individual comes from within," he warned.

Dr. Graham, who has been dean at Ripon for 29 years, will assume the presidency of Yankton College, Yankton, S. D., at the end of the present term.

Paper Institute Trustees Meet

Trustees of the Institute of Paper Chemistry, Appleton, Wis., held a business meeting Tuesday afternoon, May 22, at the Institute. Attending were Ernst Mahler, president; D. K. Brown and Hugh Strange, Neenah; H. P. Carruth, George Dyke, Sydney Ferguson and John L. Riegel, New York City; D. C. Everest, Rothschild, Wis.; N. W. Wilson, Erie, Pa.; Dr. Nathan Pusey, Appleton; Westbrook Steel, executive director of the Institute, and John Strange, secretary and treasurer.

Mills Active in War Loan Drive

A series of meetings has been held at the Marinette Paper Company, Marinette, Wis., to stimulate interest in the Seventh War Loan drive.

Workers of the Kimberly-Clark Badger-Globe mill, Neenah, Wis., have pledged themselves to invest $12,770 in war bonds and have increased their payroll deductions to a total of $7,950 to set a new record in the drive.

The Lakeview mill, Neenah, of the corporation, is one of the first industrial firms in the city to announce completion of its drive, with a total bond pledge of $6,200 among 162 persons, and 505 persons increasing their payroll deductions to buy bonds, total of which had not been determined.

S. F. Shattuck Elected

S. F. Shattuck, vice president of Kimberly-Clark Corporation, Neenah, Wis., was elected president of the Chamber of Commerce which serves Neenah and Menasha, at a board of directors meeting Tuesday noon, May 22, at the Valley Inn, Neenah. He is expected to announce his committees for the year soon. The next directors' meeting is scheduled for June 26.

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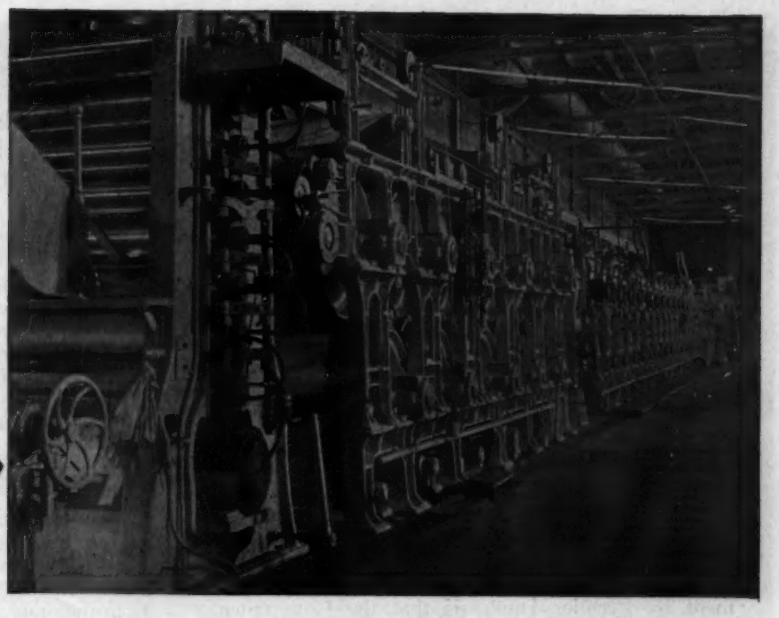

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Propose Act to Reallocate Forest Lands

Government Sponsored Bill In Quebec Legislature Would Assist Pulp and Paper Mills In Getting Raw Material—Larger Pulp and Paper Supplies Are Now Expected—Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 28, 1945—Under the title of "An Act Respecting the Industrial Stability and Progress of Quebec," a Government-sponsored Bill has been introduced in the Quebec Legislature the object of which is to reallocate forest lands so as to assist pulp and paper companies and some other forest industries in obtaining raw material by letting these companies have limits more adjacent to their mills, not to oblige them to get their wood from hundreds of miles away, and in that way to make competitive conditions more equitable. Large expansions in the operations of existing pulp and paper companies and the establishment of several new complementary industries are involved in the provisions of the bill, and its introduction was the occasion for an announcement by Premier Duplessis that the Government's policy was to provide for the stabilization and permanency of the pulp and paper mills now existing rather than to encourage the increase of such mills.

The bill ranks among the most important measures having to do with the industry which has yet been before the Legislature, not only because of its direct bearing on the operations of some of the largest pulp and paper concerns in the province, but also for its implications in respect to the industry generally. It is notable in another respect, namely that its introduction has the cordial approval of members of all parties in the House.

The exchanges of timber limits provided for in the Bill involves the Canadian International Paper Company, the Anglo-Canadian Pulp and Paper Mills and the Quebec North Shore Paper Company. The mills of the latter at Baie Comeau are the source of newsprint supply for the New York Daily News. The interests of the Canada Paper Company at Windsor Mills are also involved. The bill also provides for supplies of hardwood for the further development of the Singer Manufacturing Company at its sewing machine cabinet plant at Thurso, for which a $500,000 expansion is planned. On this expansion there also hinges a $4,000,000 expansion of the company's parent plant at St. Johns, Que., where sewing machines are manufactured. Hitherto the company has imported certain parts, notably motors, from the United States. In future the company plans complete manufacture of sewing machines and accessories at its plant and entry on a big scale into export markets, notably in South and Central America.

The premier said that the Canada Paper Company for whom limits are provided intend to manufacture a byproduct at Windsor Mills which has never before been manufactured in this province. He did not divulge the nature of this product, since to do so might cause some feeling elsewhere where the product is now made. In addition, the Canada Power Company intends to enlarge its scale of operations in the fields in which it is now engaged. The concessions to the Canada Paper Company are subject to the Canadian National Railways building a branch line to connect the timber Limits, which are in the Abitibi region, with the main line.

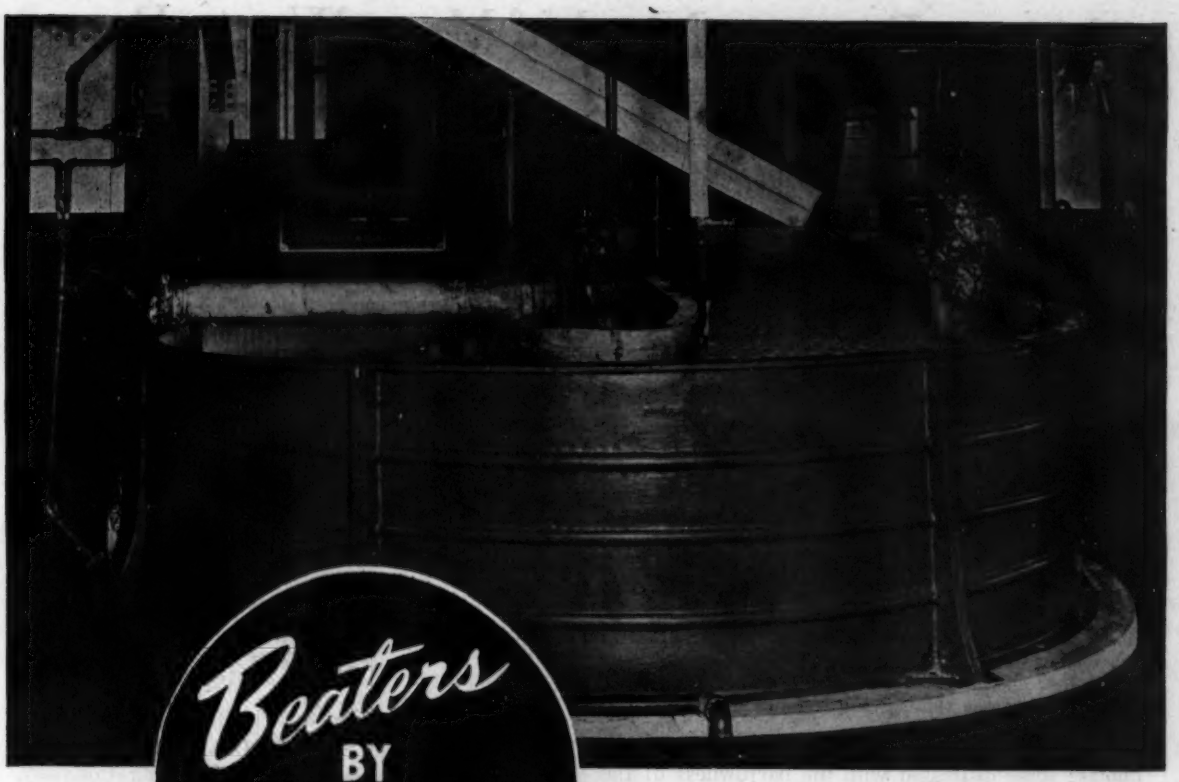
The premier took occasion to lay down Government policy as regards colonization in its relation to the vital and great forestry industry which has many millions invested in the province, pays out many more millions in wages, constitutes the greatest single industry of the province, and specially makes for the stabilization of Canadian money in the New York market. Colonization and the forestry industry should no longer be considered as being antagonistic, he said. They should look upon other as being complementary the one to the other, and treat each other as good neighbors.

Hon. Mr. Bourque, Minister of Lands and Forests, said that he had had five experts at work on the plans for this Bill for the last six months. There had been a massacre of the forests in the past, said Colonel Bourque, and the result was that some companies today find their limits not big enough to furnish raw material needed. The International Plywoods, Limited, intended to build the largest hardwood veneer plant in Canada at Gatineau, he said.

Under the Bill the Singer Sewing Machine Company will get limits in the counties of Joliette, Berthier and Maskinonge; the Canadian International Paper Company will get limits, in the Gatineau Valley, of 85 square miles and 120 square miles respectively; the Canada Paper Company will get limits in the Abitibi region of 700 square miles over a region covering 1,400 square miles; the Canadian International Paper Company will get two limits of 14 square miles and 252 square miles respectively in the Chibougamou area, and its subsidiary the New Brunswick International Paper Company 122 acres of forest in Matapedia and cutting rights over an additional 718 acres. Certain transfers of limits by the companies to the province are involved in these concessions. The Anglo-Canadian Pulp and Paper Mills will transfer cutting rights in certain parts of its Manicouagan limits to the Quebec North Shore Paper Company, and in return will get cutting rights on Crown lands covering 1,500 square miles in the Bersimis River Basin. Save in the case of the New Brunswick International Paper Company, all wood cut on the timber limits granted must be worked in the province and shall not be exported in its rough state without Government authorization.

Expect Larger Pulp and Paper Supplies

As the season progresses manufacturers are increasingly confident of a larger output of pulp and paper this year and of their ability to fulfill their conditional promise to raise the allocation of newsprint for the United States to 215,000 tons of 32-lb. paper per month for the third quarter of the year. The conditions they attached to this undertaking with the U. S. Government authorities were the availability of labor and materials, including wood, and in both these directions favorable progress is reported. As to manpower, progressive easing of the shortage is already under way, following the suspension of the call-up system for compulsory military service and a beginning in the discharge of men who have served.



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Chicago Reports Need of More Waste Paper

Mill Requirements For Larger Supply of Paper Stock Used To Stimulate Collections—Salesmen View Air Film—Paper Group Gives Special Program — Col. Hardt Transferred — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 28, 1945—Some of the midwest paper mills are reported to again be needing waste paper and the news is being used as the impetus to further collections of waste paper in this area. Meanwhile, the jobber trade here is building up more and more shortages with the hope, however, that things may not be as black as they seem. Some comment indicates that more favorable "breaks" may occur within six months time.

Meanwhile, the pulp situation continues woefully inadequate though the industry in general has done a surprisingly good job in making the best use of the supplies it does have on hand. Most encouraging of all the news locally has to do with the plans the industry is making for the post-war period. When interviewed, local paper trade executives give indications that they are fully abreast of the possibilities of expansions in use and of the new developments which are expected to decrease the cost of paper while at the same time giving it more durability and better appearance.

All grades of paper were patiently attempting to fill quotas; some distressed with the narrowness of the price structure along with falling sales volume due to shortages of raw materials. If the "squeeze" gets worse a drastic decline in volume would have some genuinely bad effects, according to local reports.

Salesmen View Air Film

Members of the western division of the Salesmen's Association of the Paper Industry will be treated to a sensational new color film at their Monday, May 28, meeting at the Hotel Sherman. The salesmen who gather for the regular noon session will view the United Air Lines new sound and color film which shows what the air line companies have in line for the post-war period.

The western division has its abbreviated golf schedule all set, with the first outing to be held at the Park Ridge Country Club on June 15 and the second on August 8 at the Olympia Fields Country Club. The arrangement should be an equitable one geographically for Park Ridge is on the far north side while Olympia Fields will be handy for those living on the south side. There is the chance, according to Jim Sensenbrenner, golf chairman, that a third outing will come along if the National Paper Trade Association decides to resume its Fall meeting in Chicago. If that is the case dates will be set to coincide with the business sessions.

Paper Group Views Printing Film

The Chicago Professional Papers Group held its semi-final meeting of the current season on Monday evening, May 21 in the dining rooms of the Chicago Bar Association. More than 200 members and guests —a near high in attendance for the rapidly growing Association—enjoyed the special program and participated in the election of officers for the ensuing year. As a tribute to their energetic work in building the Group to its highest point of efficiency, the organization reelected all officers, headed by Harry Weston of Paper Industry, who will again serve as President.

The program centered around a 2200 foot movie film, the "Material Side of Printing," which depicted, in interesting fashion, the nine phases of the graphic arts industry including the manufacture of paper with stress on the making of coated papers; the manufacture of foundry type; copper and lead mold electrotypes; photo engraving, both live and half tones; the manufacture of cylinder presses and their operations; the making of printing inks; the manufacture of printing press rollers and concluding scenes showing pamphlet binding operations. The film was shown through the courtesy of the Young Printing Executives Club of New York City.

The Chicago Professional Paper Group will hold its next meeting on the first Monday in June and then adjourn for the summer months to renew activities in September.

New Sanitor Sales Head

L. T. Thomasma has recently been appointed sales manager for the Sanitor Manufacturing Company, Chicago. Mr. Thomasma was formerly connected with the Todd Company of Rochester, N. Y. His new connection specializes in the making of paper toilet seat covers and cabinets and plans to develop several new features as a part of a well developed post-war program.

Colonel Hardt Transferred

Colonel Dan Hardt, well known paper trade executive who has been in charge of the Sixth Transportation Zone headquartering in Chicago has been transferred to another station. Rumor has it that his new duties will be in connection with the vast troop movement from the European to the Pacific war zone. Colonel Hardt has spoken to the SAPEYES and numerous other paper groups in this vicinity and was particularly well accepted as a part of the Christmas program staged by Ben Babbitt of the SAPEYE group.

N.P.B.M.A. Elects Bond President

The National Paper Box Manufacturers Association, on May 16 and 17, in Atlantic City, elected A. M. Bond, of the Consolidated Paper Box Company, Somerville, Mass. president of the association. He succeeds Walter P. Miller, Jr. of the Walter P. Miller Company, Inc. Philadelphia. Other officers elected by the directors were Arthur H. Kroeck, of the Kroeck Paper Box Company, Chicago, vice-president; Henry J. Aemisegger, of G. A. Slater, Inc. Philadelphia, treasurer and William R. Kreeger, secretary.

The meeting was attended by the members of the Post War Development Committee and of the Advertising Committee of the association, reporting on their past activities and presenting programs for the ensuing year.

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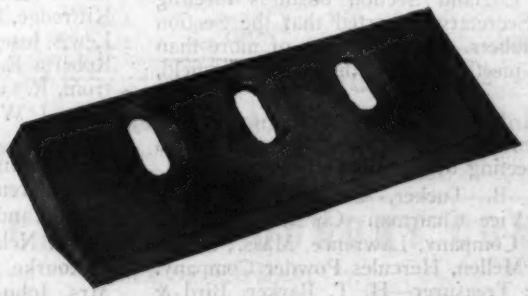

New England TAPPI and Superintendents Meet at Norwich, Connecticut

The New England Section of the Technical Association of the Pulp and Paper Industry and the Connecticut Valley Division of the Superintendents Association met jointly at the Norwich Inn, Norwich, Conn. on May 25-26, 1945. About 150 attended. On Friday afternoon there were visits to the mills of the Robertson Paper Box Company, Montville, Conn., and the Inland Paper Board Company, Versailles, Conn. In the evening a dinner was held at which W. L. Foote, Chairman of the New England Section presided. Brief talks were given by Vance P. Edwardes of the International Paper Company and President of TAPPI, John H. Brown, Chemical Paper Manufacturing Company and Chairman of the Connecticut Valley Division, Ollie Messner and H. W. Schwartz of the Robertson Paper Box Company, and R. G. Macdonald, Secretary of TAPPI. The principal address was given by E. Sherman Chase of Metcalf & Eddy Company, Boston, Mass. who discussed "Stream Pollution With Special Reference to Paper Mill Wastes."

Mr. Chase said in part "Methods for treatment of wastes fall in two general categories. First, the removal of suspended matters, and second, the oxidation of dissolved organic impurities. Where water supplies are involved, disinfection of the final effluent with chlorine may be required. Sedimentation, with or without secondary treatment, is generally used as a preliminary treatment. In the case of industrial wastes plain sedimentation and chemical precipitation are both in use for treating wastes containing large quantities of suspended solids. In recent years, sedimentation tanks are generally equipped with mechanical devices for the removal of settled solids or sludge. In the case of oxidation processes, sand filters, trickling filters, and the activated sludge process such as are used for sewage may be adapted for certain wastes.

Problems of Sludge Disposal

"One of the most serious problems in connection with the treatment of sewage and industrial wastes is the disposal of the sludge produced. The dewatering of the sludge can frequently be accomplished by filter presses or vacuum filters and in the case of older treatment plants the use of process beds of sand and cinders has been found economical. The dewatered sludge can be disposed of by filling in low ground or in some cases for local use as a fertilizer."

At the New England Section business meeting Henry Mellen, Secretary, reported that the Section now has 212 members. An attendance of more than 300 featured the meeting held in the fall at Pittsfield, Mass.

Roland Packard, reporting for the nominating committee, presented the following slate which was elected at this meeting by acclamation.

Chairman—L. B. Tucker, Crane & Company, Dalton, Mass.; Vice Chairman—Chester H. Child, Merrimac Paper Company, Lawrence, Mass.; Secretary—Henry L. Mellen, Hercules Powder Company, Holyoke, Mass.; Treasurer—H. T. Barker, Bird & Son, E. Walpole, Mass.; Executive Committeemen—W. L. Foote, B. F. Perkins Company, Holyoke, Mass.; E. W. Strecker, Esleek Mfg. Company, Turners Falls, Mass.; H. U. Kiely, American Writing Paper Company, Holyoke, Mass.; P. S. Barnhart, Westfield River Paper Company, Russell, Mass.; G. C. Schmid, Falulah Paper Company, Fitchburg, Mass.; Werner Kaufmann, Kupfer Bros. Company, Northbridge, Mass.; F. A. Strovink, American Cyanamid & Chemical Company, Boston, Mass.; and P. S. Bolton, Robert Gair Company, Montville, Connecticut.

Mr. Tucker, in accepting the Chairmanship, praised the fine work of his predecessor, W. L. Foote, who has done much for the New England Section, and was particularly successful in financing the 1942 fall meeting of the national organization in Boston. In token of the esteem of the Section Mr. Tucker presented Mr. Foote with a War Bond.

On Saturday morning, L. E. Smith of the Downingtown Mfg. Company, E. Downingtown, Pa., described the No-Foam Approach Flow System and showed a motion picture on Post War Paper Making Machinery. Slides were used to illustrate parts of the equipment used.

In the afternoon there was a golf tournament and card games, followed in the evening by a dinner and dance.

Among Those Present

Those present included: Mr. and Mrs. Joseph J. Aid, Mrs. Carl Anderson, J. A. Auchter, P. W. Ayers, John Bainbridge, Charles D. Balch, W. J. Barrett, P. S. Bolton, E. J. Bonville, Chester W. Bowers, Mr. and Mrs. Ralph E. Briggs, Sidney A. Brown, William Brown, Mr. and Mrs. Stanley Brunelle, H. C. Burnett, Mr. and Mrs. Harold H. Burrows, Mr. and Mrs. Wm. F. Butler, William H. Caddoo, A. J. Cardwell, Mr. and Mrs. J. F. Carey, Charles Champion, E. Sherman Chase, Mr. and Mrs. C. H. Child, Clinton Child, H. G. Clark, S. E. Colburn, W. L. Craig, J. F. Cronin, Mr. and Mrs. R. C. Dawson, F. A. Delforge, Earl Diener Paul A. Donaghy, R. F. Driscoll, V. P. Edwardes, Mr. and Mrs. Howard Ferguson, Mr. and Mrs. H. H. Fish, W. L. Foote, Harry Forman, P. A. Forni, Jess Fraser, A. W. Frey, A. H. Gilmore, H. L. Glass, H. E. Grippen, Mr. and Mrs. Donald M. Hall, Chris. Hammond, John Hankard, S. S. Harkavy, S. L. Hollis, C. I. Horton, A. L. Hayes, Charles Jennings, A. O. Johnson, Werner Kaufmann, Franklin T. Kelly, Mr. and Mrs. R. Kilty, Mrs. Roberta Kittredge, Warren S. Kumbald, O. F. Lane, Charles L. Lewis, Joseph T. Loomer, A. C. Loomis, John Loomis, Roberta E. Loomis, Patricia A. Love, F. O. Lundstrom, R. G. Macdonald, Mr. and Mrs. Robert Mannheim, J. W. Marcy, Richard Marvin, M. Craig Maxwell, Mrs. Madelyn McElroy, Mr. and Mrs. Paul W. McPherson, H. L. Mellen, Ollie W. Messner, Mr. and Mrs. Clarence Morgenstern, Mr. and Mrs. M. O. Morris, Mr. and Mrs. John C. Morrone, Mrs. Laura Morse W. L. Nelson, Frank Nyborn, J. J. O'Brien, F. W. O'Rourke, Roland A. Packard, R. L. Page, Mr. and Mrs. John E. Pendleton, Al. Perry, Henry Perry,

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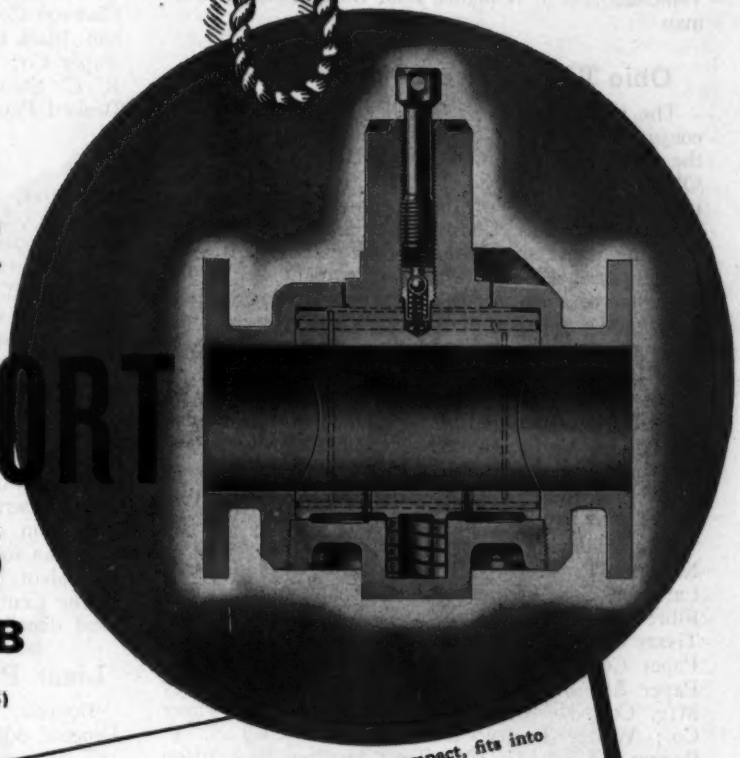

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A. J. Powers, J. G. Rearick, E. A. Regnier, A. R. Ressig, F. W. Rhoten, J. H. Rich, E. A. Richardson, H. W. Richter, P. Ross, Fred W. Schneider, Mr. and Mrs. Harry W. Schwartz, F. L. Simons, C. P. Slocum, Mr. and Mrs. Leon Smith, J. P. Strasser, F. A. Stovink, H. E. Swank, Edward Sweeney, Roy Tewksberry, George Thompson, L. B. Tucker, George Verow, Jr., A. P. Wagenknecht, C. A. Wallace, C. W. Walters, G. C. Walton, Mr. and Mrs. Joseph Waters, Mr. and Mrs. W. E. Wentworth, R. C. Wiberg, F. H. Willemain, A. B. Williams, John Wright, Milton Yeoman

Ohio TAPPI Meets Superintendents

The Ohio Section of TAPPI held a meeting in conjunction with the Superintendents Association of the district at the Manchester Hotel, Middletown, Ohio, May 19, 1945. The afternoon session was under the auspices of the Technical Association at which Carl Roess, Chairman, presided. A very interesting paper on "The Post War Possibilities in Coating and Filler Clays" was presented by Olin Callighan of Edgar Bros. Company. Moving pictures in color were shown of the various processes in the mining and refining of clay and proved a very interesting adjunct to Mr. Callighan's talk.

Dinner at 6:30 was laid for seventy-five guests. J. J. Andrews initiated his new office as chairman of the Miami Valley chapter of The Superintendents Association and introduced Mr. Norman Weil as speaker of the evening, whose subject, Fourdrinier Wires, was handled in his usual inimitable style.

The following were present: Ray L. Barton, National President, Michigan Paper Co.; Homer Lattimer, 2nd Vice President, Champion Paper & Fibre Co.; H. H. Harrison, Past President, Crystal Tissue Co.; F. L. Zellers, Past President, Chillicothe Paper Co.; H. Randall, Past President, Champion Paper & Fibre Co.; H. Vanderberg, H. E. Staley Mfg. Co.; Herbert A. Brawn, Miamisburg Paper Co.; Walter Beatty, Bevis Machine Co.; S. V. Rogers, Silvester Co.; W. Boast, Gardner Richardson Co.; C. E. Brandon, Aetna Paper Co.; J. A. Horner, Champion Paper & Fibre Co.; Lowell Haworth, Fox Paper Co.; W. P. Hurd, Socony Vacuum Oil Co.; J. N. Markel, Socony Vacuum Oil Co.; E. L. Lukemire, Dicalite Co.; V. V. Vallandigham, Kelco Co.; C. T. Radke, Kelco Co.; Herman H. Streitmann, Dicalite Co.; Duke Williams, Mead Corp.; W. C. Slattery; E. W. Heilman, Prairie State Paper Mills; Phil Darnell, Cincinnati Rubber Mfg. Co.; N. V. Reinhold, Cincinnati Rubber Mfg. Co.; F. J. Brennan, Corn Products Co.; Herbert Bittinger, Beckett Paper Co.; Wallace Downie, Beckett Paper Co.; M. L. Barker, Beckett Paper Co.; R. J. MacMeekin, Economy Pumps, Inc.; H. A. Victorsen, Economy Pumps, Inc.; S. E. Vought, Wyandotte Chemical; Robert Weber, Mathieson Alkali Works; Edward Lum, Beckett Paper Co.; J. Marcum, Beckett Paper Co.; Hal A. Harvey, Penick & Ford Co.; W. Riegers, Beckett Paper Co.; John Burnett, Beckett Paper Co.; Thos. B. Hermesey, Prairie State Paper Co.; L. H. Ritz, Bevis Machine Co.; Douglas Robbins, Douglas Robbins & Co.; Carl D. Roess, Wrenn Paper Co.; Olin W. Callighan, Edgar Bros. Co.; Nerman O. Weil, W. S. Tyler Co.; J. J. Andrews, Fox Paper Co.; Raymond F. Bennett, Ecusta Paper Corp.; Robert L. Eminger; J. W. Hollmann, Fox Paper Co.; W. H. Hall, Prairie State Paper Co.; P. E. Howard, Bevis Machine Co.; Chas. J. Ludwig, Mead Corp.; Paul Schrieber, General Dyestuff; E. H. Bredl, Miami Industries Co.; B. M. Baxter; Allan Hyer, Black Clawson Co.; Claud A. Sorg, Sorg Paper Co.; G. H. Suhs, Sorg Paper Co.; W. W. Trumnell, Regal Belting Co.; Art Thurn, Champion; R. D. McCarron, Stein Hall & Co.; W. P. Taylor, Champion; S. R. Olsen, Champion; Frank Root, Clinton Co.; H. F. Bennett, Gardner Richardson Co.; C. L. Clark, Nash Engineering; J. A. Smith, Nash Engineering; H. J. Borchers, Midwest Fulton Machine Co.; Howard Buechler, Black Clawson Co.; Grant Sharpe, Black Clawson Co.; J. R. Simpson, Champion; W. Macklem, Black Clawson Co.; C. F. Sisson, Mac Sim Par Paper Co; Fred Carroll, Mac Sim Par Paper Co.; R. C. Stewart, Shartle Bros.; Val Friedrich, Jr., Beckett Paper Co.; C. T. Bingham, W. S. Tyler Co.

Boston Trade News

BOSTON, Mass., May 28, 1945—The G. L. Fisher Company, Dudley street, Roxbury, one of New England's leading wall paper concerns, held open house May 22 in observance of its 50th year in business. Established in 1895, it has been under the same ownership for 50 years. Under the management of W. L. Fisher, the concern has consistently prospered and grown to its present eminent position in the wall paper trade.

William A. Dempsey, of the Century Paper Company, Inc., has two sons in the service. Ensign William A. Dempsey is night fighter off one of the carriers in the Pacific. Signalman John Dempsey is on a troop carrier also on the Pacific.

Captain A. L. Madden, of the Navy, formerly a salesman for Carter Rice & Co., Corp., is at his home in Waban, Mass., on leave from duties on the Pacific.

The Century Paper Company, Inc., has become a local distributor for ChamPADco Padding Cement.

Lieut. Proctor Freed from Prison Camp

BOSTON, Mass., May 28, 1945—Lieut. Richard Proctor, son of Col. and Mrs. Charles S. Proctor, 187 Hovey street, Lowell, Mass., who was held prisoner by the Nazis, has been liberated, according to a cable received by his parents from Richard, Friday night, May 18. Col. Proctor is head of the Proctor Paper Company, Lowell and Boston. On April 7 he received a telegram reporting that Lieutenant Proctor was lost over Germany as of March 24. A letter from Richard's colonel praised very highly the work of Lieut. Proctor. In his cable of May 18, Richard said to the effect that he was safe and well and would be home soon. Lieut. Proctor served as navigator on the B-17 bomber, the "Hubby Cub," which was shot down over Germany March 24. A graduate of Deerfield Academy, he had completed his third year at the Lowell Textile Institute when he entered the army air forces in 1943. He trained at fields in Pennsylvania, Florida and Texas, winning his wings at Randolph Field in Texas.

Champion Intl. Elects Officers

LAWRENCE, Mass., May 28, 1945—According to an announcement of the Champion-International Company, the following officers have been elected for the ensuing year: Charles T. Dole, chairman of the executive committee; A. Murray Howe, president; William T. Dole, vice-president and treasurer; Sheldon E. Wardwell, vice-president and clerk of the corporation, and Roland B. Hammond, assistant treasurer.

One quality always stands out!

In bleached Kraft it's Stora Quality 32

"THE STANDARD FOR COMPARISON"

STORA 32

STORA KOPPARBERG CORPORATION

230 PARK AVENUE • NEW YORK 17, N. Y.

Obituary

A. F. Cottrell

A. Frank Cottrell, sixty, president and treasurer of the Cottrell Paper Company, Rock City Falls, N. Y., died May 23 in Ellis Hospital, Schenectady, following a major operation. He was a director of the Ballston Spa National Bank, and a trustee of the Rock City Falls school.

Surviving are his wife, Nellie Cottrell; a daughter, Mrs. Stanley Brass, of North Milton; a son, James Cottrell, of Rock City Falls; two sisters, Mrs. Charles Sumner, of Rock City Falls, and Calista C. Cottrell, of Tiverton, R. I., and a brother, James T. Cottrell, of Fall River, Mass.

John G. Seckel

John G. Seckel, vice president, and secretary of Paper Merchants, Inc., Philadelphia, Pa., died at the home of his cousins in Philadelphia on May 22 after a lingering illness.

Mr. Seckel was associated with this firm and its predecessor for nearly fifty years and became a director and officer when Paper Merchants, Inc. took over the Riegel interest in 1930.

He was a bachelor, 77 years of age and a lifelong resident of Riverton, N. J. until recent years.

Services were held at Christ P. E. Church, Riverton, May 25.

Willard J. Henry

Willard J. Henry, a vice-president, director, and head of the sales department in the Chicago office of the Advance Bag & Paper Company, Inc., died in his early sixties May 23, in that city, after an illness lasting a considerable period. He had been inactive in business for several months. Mr. Henry had been with the company approximately 25 years. His widow, two sons, Willard J. Henry, Jr., and John Henry, and several grandchildren are living.

Charles A. Mlsna

Charles A. Mlsna, aged 62, assistant operating engineer for the Nekoosa-Edwards Paper Company, died at his home at Nekoosa, Wis., Sunday morning, May 20, after a long illness. He had been a member of the Nekoosa Volunteer Fire Department for 20 years. Survivors are the widow and six children. Funeral services were conducted Wednesday morning, May 23, at Sacred Heart Catholic Church, Nekoosa, and burial was in Riverside cemetery.

Bright Retires as S. & T. President

Announcement is made by Stevens and Thompson Paper Company, Greenwich, N. Y., of the resignation of John W. Bright as president and general manager of the company, and his appointment as chairman of the board.

Mr. Bright has disposed of practically his entire holdings in the corporation to Robert B. Stevens, who succeeds him as president and general manager.

It is expected that Mr. Bright will devote a portion of his time to the affairs of the company in the future.

Lester J. Stephens has been elected secretary and assistant treasurer, and Ashton P. Woodward, treasurer and assistant secretary. The board of directors have appointed M. G. Dokken sales manager.

TO CONVERT ABITIBI PLANT

(Continued from page 9)

of 13 special rangers to work on insect problems and the University of Toronto has set up a chair in entomology. Four more Norseman aircraft will be added to the Ontario government's spraying fleet of four Norsemen and one Stinson. Two bases for aircraft operations are being opened in Ontario, one at Timmins, to be opened this year, and one at Parry Sound, planned for next year.

Manager Wallace Delahey of the Ontario Forest Industries Association is of the opinion that more attention will be paid by the governments of the forests provinces to training personnel, particularly in the direction of expanding the knowledge of graduates and other established technicians. He commended the Ontario Department of Lands and Forests in sending senior members of the department for brief study of the Tennessee Valley authority's conservation scheme and other operations. Ontario, he says, might well give more thought to sending senior foresters for study of practice and administration on the Pacific Coast, and in Quebec, the Maritimes, the Southern and Midwestern States. He thinks Canadian foresters should be enabled to visit Scandinavia and Russia and that, in addition, some arrangement could be made for international exchange training for forestry undergraduates.

Widening Uses of Pulp Foreseen

The rapid strides made in widening the uses of pulp and paper during the war has indicated tremendous future potentialities for the industry. There are two main directions along which progress is likely to continue. First, pulp and paper may form a cheap base for direct chemical processing into other products, from which are made such things as explosives components, rayon, cellophane, celenese and pulp-based plastics. Secondly, the use of pulp and paper itself, either processed mechanically or combined with some other products. Already the uses to which pulp and paper may be put are legion and will increase. Only Russia and Brazil exceed Canada in the extent of their forested areas.

Canada's position in the pulp and paper industries alone, without considering lumbering and other wood products industries, would seem to justify the increasing demand for more educational and training facilities for forestry technicians.

Gair Buys Binghamton Site

Robert Gair Company, Inc., has acquired a new factory site in Binghamton, N. Y. The property consists of approximately 4½ acres, is about 400 feet deep, located on Grant Street, and bounded by the Delaware and Hudson Railroad and Ely Street. The company is planning to erect on this site a large new plant equipped in the most modern manner for the manufacture of quality corrugated products, which, when in full operation, will require from 150 to 200 employees.

The company's corrugated box plants at Tonawanda, Syracuse, Utica and Binghamton, will afford excellent service to New York State and Northern Pennsylvania. The company now owns six paperboard mills and fourteen fabricating plants (folding cartons and shipping containers) in the United States, and six mills and eight plants in Canada.

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From the Heart of the Clay Belt

Our clay properties are located in Washington County—in the heart of the famous clay belt of Georgia—widely recognized as the source of finest domestic clays.

Here we have extensive mining facilities; with a modern refining plant that insures a continuous source of supply of uniform technically controlled

HIGH-GRADE WATER-WASHED ADHESIVE-SAVING COATING CLAYS for

PAPER

Remember, on the quality of the clay depends the opacity and ink receptivity of the sheet you manufacture. You can use these clays with confidence, satisfaction and economy. They are mined and distributed by an organization long-experienced in the production of Quality Clays, controlled particle size, brightness, moisture content and acidity, for perfect blending which prevents wear on cylinders and rollers of printing presses. Our organization is ready to serve you — and serve you well. Unlimited reserves assure you of uniform Quality Clay that you will demand at all times. Let us send you testing samples and complete technical data.—No obligation, of course . . . Address

BURGESS WASHINGTON CLAYS, LTD.

P.O. BOX 270

Sandersville – Georgia

High-Grade Coating Clays **Filler Clays**

To Join Sherbrooke Machineries Ltd.

Frank S. MacDonald, production manager of E. B. Eddy Company's Booth Mill, at Ottawa, will join the organization of Sherbrooke Machineries Limited, Sherbrooke, Quebec, on June 1. Mr. MacDonald will

FRANK S. MACDONALD

bring to the equipment manufacturing field twenty years of varied experience in pulp and paper manufacturing, having been employed by Spruce Falls Power & Paper Company, Dryden Paper Company, and the Newfoundland Pulp & Paper Company at Cornerbrook, Nfld.

Castle & Overton Add New Line

Castle & Overton, Inc. of 630 Fifth Avenue, New York, N. Y., have been appointed sole agents for the sale of Brompton Pulp & Paper Company's kraft pulp. Brompton operates a kraft pulp mill at East Angus, Quebec, and expects to complete construction of a new kraft mill at Red Rock, Ontario, in the early fall. Brompton also operate groundwoods mills at Nipigon, Ontario, East Angus and Bromptonville, Quebec, all of which Castle & Overton, Inc. will continue to handle exclusively.

Sutherland Fire Causes $50,000 Loss

Fire that broke out last week in the Sutherland Paper Company warehouse, North Pitcher street, Kalamazoo, Mich., caused a loss to the building and contents that may amount to $50,000. L. W. Sutherland, the city's mayor and chairman of the board of directors at Sutherland Paper Company, said he believed the loss may be between $40,000 and $50,000.

Spontaneous combustion in the paper bales is believed to have caused the fire.

Crane Gets Currency Paper Contract

WASHINGTON, D. C.—Crane and Company has been awarded the contract for furnishing 113,865,000 sheets or about 1375 tons of currency paper for the fiscal year 1946, at 39 cents. The same firm will also furnish 50,675,000 sheets or about 958 tons of debt securities paper at 28.5 cents. Crane and Company were the only bidders and they held the contract for 1945 at the same prices.

WPB Studies Newsprint Prospect

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 30, 1945—The outlook for augmented newsprint quotas for newspaper use during the third quarter of 1945 is not too favorable at this time, it was announced today by the War Production Board, after a meeting of a task group of newspaper publishers with J. Hale Steinman, director of the Printing and Publishing Division.

Mr. Steinman stated that although Canada will ship 215,000 tons of newsprint a month, commencing July 1 through the third quarter of 1945, instead of 200,000 tons a month, this increase of supply is offset by the present excess of 50,000 tons of deferred newsprint orders that has accumulated in the hands of manufacturers since January 1, 1945. These deferred orders have accumulated because U. S. customers and Government agencies have been ordering in excess of available supply, and they must be taken care of out of increased production.

The task group recommended that an effort be made to eliminate this over-order position by reducing the inventory ceilings of publishers as of June 30, 1945, as follows: to 30 days' supply for publishers in the Northern, Eastern and Central States, and 50 days' supply for publishers in the Western and Southern States. U. S. Newspaper publishers would then be permitted to use their full consumption quota by withdrawing some paper from inventories, but would be required to refrain from ordering more paper during the balance of the quarter, Mr. Steinman, explained.

The present rate of newsprint orders from the Army, Foreign Economic Administration and other Government agencies is running at a rate of 20,000 tons or more per month, which is much in excess of what it was in 1943 and 1944. So long as this rate of orders continues it will act as a continued deterrent to increasing newspaper consumption quotas, Mr. Steinman said.

He added that the task group will report to the Newspaper Industry Advisory Committee at its meeting on June 11, after the full effects of the proposed cut in inventory are better ascertained, and after additional information on supply is secured from the meeting on June 7 in Montreal of the 30-Pound Newsprint Task Group with the Canadian manufacturers.

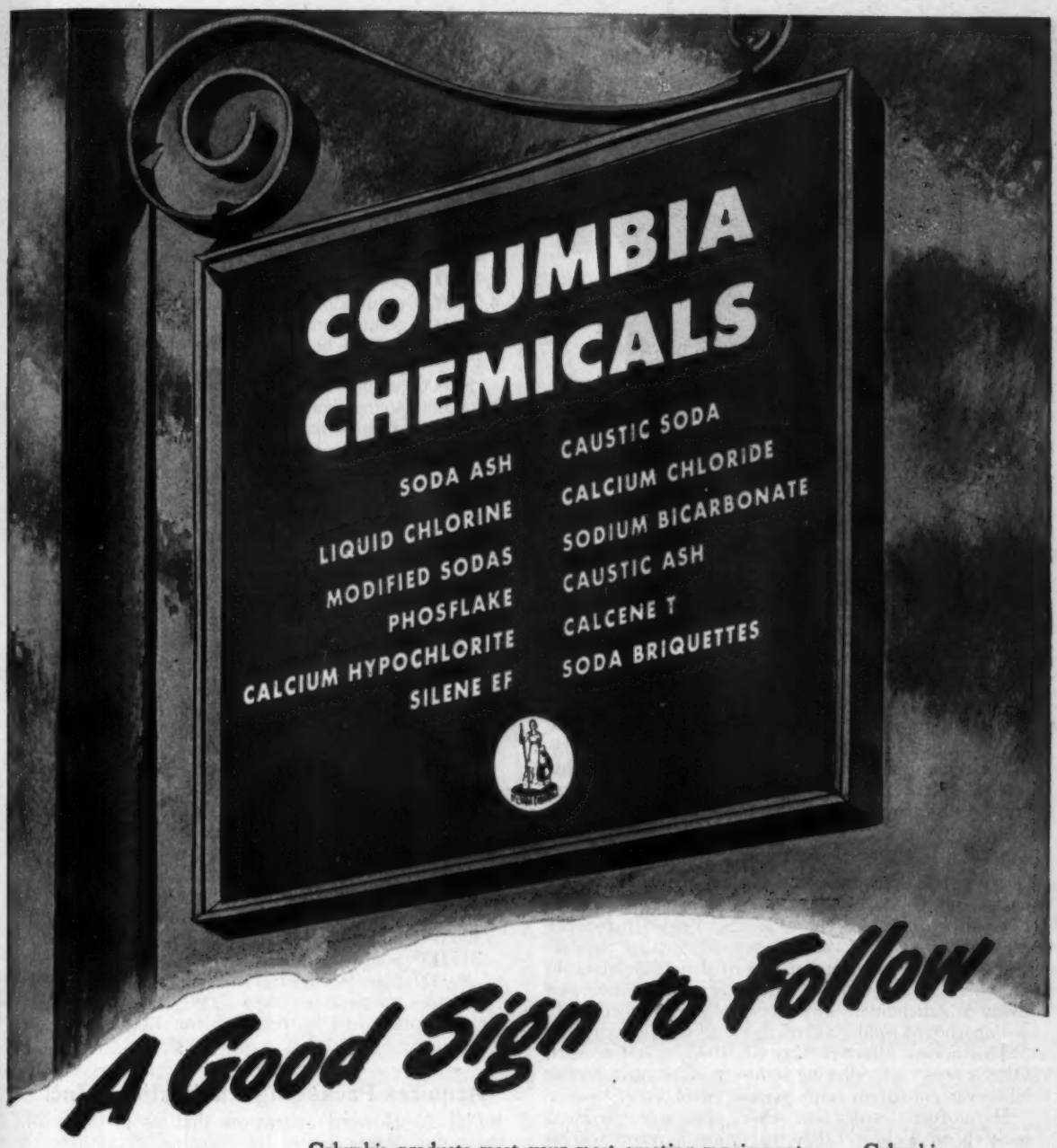
Jack Beierwaltes Joins Watervliet

The Watervliet Paper Company, manufacturer of label, offset and coated book papers, has added Jack Beierwaltes to its organization. Mr. Beierwaltes will be engaged immediately in research work in the relation of printing ink to paper surfaces. Ultimately, his efforts will extend to technical service and sales activities.

Jack Beierwaltes, formerly sales manager of the E. J. Kelly Company, Kalamazoo, Mich., ink makers, joined that Company as a laboratory assistant in 1935 upon graduation in Chemistry from the University of Michigan. He was subsequently appointed advertising manager and later sales manager of the company.

Port Alice Mill Resumes After Fire

Operations have now been resumed at the plant of the B. C. Pulp and Paper Mill, at Port Alice, B. C. The plant was badly damaged by fire that broke out on May 11th, and work was suspended for almost a month.



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Columbia products meet your most exacting requirements . . . Columbia policies contribute to enduring business relationships. Well located plants and excellent distribution facilities are other important factors in the selection of Columbia as your source of alkalies and related chemicals.

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PITTSBURGH PLATE GLASS COMPANY
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PHILADELPHIA • MINNEAPOLIS • CHARLOTTE • LOS ANGELES

Korsnas Names Hall Sales Manager

Gosta Hall has been appointed sales manager of the Korsnas Company in Sweden, large producers of sulphite and sulphate pulps. Prior to his new engagement, Mr. Hall was technical director of the Swedish

GOSTA HALL

Pulp Company. He has had a great deal of experience in paper and pulp mills in this country as well as in Europe, and was a member of the Swedish Trade Paper industries of Sweden.

His appointment will bring him frequently to this side to promote his company's interest. Pagel, Horton & Company, Inc., 347 Madison Avenue, N. Y. C. are Korsnas Company's agents in the United States.

Ends Paperboard Sales Records

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 28, 1945—Buyers of paperboard east of the Rocky Mountains are no longer required to keep records of their purchases on file, the Office of Price Administration announced today in Amendment 21 to Revised Price Schedule 32 —Paperboard Sold East of the Rocky Mountains.

This action, effective May 31, 1945, is in line with OPA's policy of relieving industry of record-keeping wherever consistent with price control.

Heretofore, buyers and sellers alike were required to keep on file for OPA inspection a record of all paperboard purchases and sales during months in which 10 tons of paperboard or more was bought or sold.

Sellers are still required to keep these records.

J. L. Fearing, Jr., Joins St. Regis

J. Lea Fearing, Jr., who after 17 years with International Paper Products Division of International Paper Company, resigned last March, is now employed in Chicago, Ill. by the St. Regis Paper Company. Graduating in 1922 from Harvard University, where he specialized in civil engineering and mining engineering, he was connected with several of the major mining companies of the Southwest and of Mexico. His health forced him in 1927 to discontinue underground work and he then became connected with Internatoinal.

Government Asks Bids June 11

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 30, 1945—The Joint Congressional Committee on Printing will receive bids on June 11 for paper for the use of the Government Printing for the three months period beginning July 1. The Committee will meet June 18 to consider the making of awards.

Bids will be received for the following quantities of paper.

2,500,000	pounds newsprint paper.
400,000	pounds telephone book news.
2,430,000	pounds machine-finish book paper.
4,000,000	pounds offset book paper.
150,000	pounds antique book paper.
40,000	pounds lightweight machine-finish book paper.
50,000	pounds 50% antique book paper.
1,000,000	pounds supercalendered book paper.
1,650,000	pounds machine-coated book paper.
400,000	pounds coated book.
4,300,000	pounds mimeograph paper.
450,000	pounds duplicator copy paper.
200,000	pounds U S M O safety writing paper.
19,200,000	pounds writing paper.
2,423,000	pounds map paper.
745,000	pounds manifold paper.
3,550,000	pounds bond paper.
650,000	pounds ledger paper.
2,480,000	pounds index paper.
60,000	pounds cover paper.
140,000	pounds manila paper.
700,000	pounds kraft paper.
600,000	sheets white gummed paper.
125,000	pounds blotting paper.
10,000	sheets high-finish red sulphite.
160,000	pounds tag board.
60,000	pounds manila cardboard.
10,000	sheets railroad board.
150,000	pounds tan board.
500,000	pounds wood cardboard.
3,900,000	pounds postal card paper.
30,000	sheets red pressboard.
300,000	pounds news board.
315,000	pounds binder's board.
80,000	pounds chestnut cover board.

In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

Acquires Packaging Publications, Inc.

Phil A. Howard announces that as of May 24, Packaging Publications, Inc. became an affiliate of the Howard Publishing Company, Conway Building, Chicago, publisher of the American Paper Merchant, American Paper Converter, American Paper Convention Dailies and the American Paper Merchant Source of Supply.

Packaging Publications publishes the American Box Maker which has been issued in the interests of the paper box industry for the past thirty years by the late Egbert B. Hoy.

To Represent Lockport Felt Co.

T. M. Gillespie, 5044 Marine drive, Chicago, now represents the Lockport Felt Company, taking over the territory of the late Frank Murphy. Mr. Gillespie also sells for the De Zurik Shower Company and for the Cheney Bigelow Wire Works. He has been connected with the paper field since 1923.

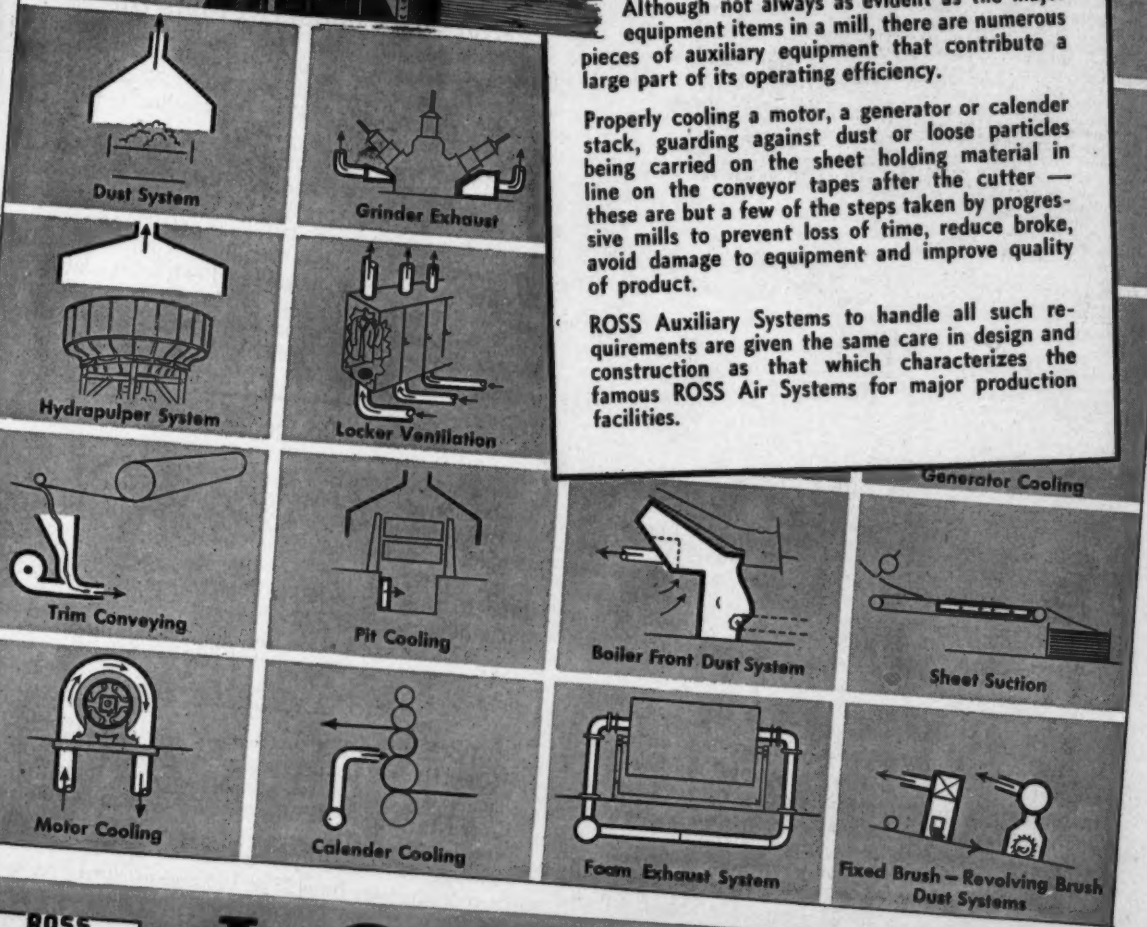
For those smaller jobs too . . . there are the ROSS

AUXILIARY SYSTEMS

Although not always as evident as the major equipment items in a mill, there are numerous pieces of auxiliary equipment that contribute a large part of its operating efficiency.

Properly cooling a motor, a generator or calender stack, guarding against dust or loose particles being carried on the sheet holding material in line on the conveyor tapes after the cutter — these are but a few of the steps taken by progressive mills to prevent loss of time, reduce broke, avoid damage to equipment and improve quality of product.

ROSS Auxiliary Systems to handle all such requirements are given the same care in design and construction as that which characterizes the famous ROSS Air Systems for major production facilities.



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ROSS CONTROL OF AIR FOR MODERN INDUSTRY SYSTEMS

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending May 26, 1945

STOCKS

	High	Low	Last
A. P. W.	5¼	5	5¼
Armstrong Cork Co.	49¾	49	49
Celotex Corp.	17½	16¾	17¾
Celotex Corp., pf.	20¾	20¼	20¼
Certain-Teed Products Corp.	11¾	10½	11¼
Certain-Teed Products Corp., pf.	153½	153	153
Champion Paper & Fibre Co.	35¼	34	34
Champion Paper & Fibre Co., pf.	113½	113½	113½
Congoleum Nairn Co.	31	30½	30¾
Container Corp. of America	29	28½	29
Continental-Diamond Fibre Co.	12	11½	11¾
Crown-Zellerbach Co.	25	24½	24¾
Crown-Zellerbach Co., pf.	103¾	103	103⅜
Dixie Cup Co.	26	24	26
Dixie Cup Co.—A.	48½	48	48
Flintkote Co.	30⅞	29¾	30½
Flintkote Co., pf.	108¾	108¼	108¼
Robert Gair	6	5¾	6
Robert Gair, pf.	17¾	17	17¼
International Paper Co.	29½	27¾	28⅜
International Paper Co., pf.	97	96	96
Johns-Manville Corp.	122½	118	118½
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	47½	46	47¼
Mac Andrews & Forbes	....	....	....
Mac Andrews & Forbes, pf.	....	....	....
Masonite Corp.	46¼	45¼	46¼
Mead Corp.	16	15¾	15¾
Mead Corp., pf. A—6%	103½	102	102
Mead Corp., pf. B—5½%	100½	100	100
National Container Corp.	16½	16	16¼
Paraffine Companies, Inc.	65	63	65
Paraffine Companies, Inc., pf.	109	109	109
Rayonier, Inc.	18¾	17¾	18⅛
Rayonier, Inc., pf.	36	35⅜	35⅜
Ruberoid Co.	39¼	39	39
Scott Paper Co.	49¾	48	49¼
Scott Paper Co., pf.	....	....	....
Sutherland Paper Co.	33	32¾	33
Union Bag & Paper Corp.	17	16	16⅞
United Paperboard Co.	8	7⅞	8
U. S. Gypsum Co.	88¼	86	88
U. S. Gypsum Co., pf.	191¾	191¼	191¼
West Virginia Pulp & Paper Co.	26	25¾	25½
West Virginia Pulp & Paper Co., pf.	110½	110½	110½

BONDS

Abitibi Pulp & Paper Co. 5s '53	107½	107	107½
Celotex Corp. 3¾s '55	....	....	....
Certain-Teed Products Co. 5½s '48	....	....	....
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	109½	109½	109½
International Paper Co. 5s '47	105½	105	105½
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending May 26, 1945

STOCKS

	High	Low	Last
Great Northern Paper Co.	38½	38¼	38½
Hummel-Ross Fibre Corp.	8¼	7½	8⅛
St. Regis Paper Co.	5⅞	5⅝	5⅞
St. Regis Paper Co., pf.	....	....	....
Taggart Corp.	6¼	5⅞	5⅞

BONDS

American Writing Paper Co. 6s '61	102	102	102

Union Bag Profits Up

The Union Bag and Paper Corporation for the first quarter of 1945 reports net sales of $11,017,098, an increase of 16% over the $9,485,930 of sales reported for the first quarter of last year.

Net income of the company for the first quarter, after provision for taxes and renegotiation amounted to $538,637, or 42 cents per share, compared with $423,236, equivalent to 33 cents per share, for the first quarter of 1944.

Gair Co. Declares Dividend

At a meeting of the Board of directors of Robert Gair Company, Inc., held on May 24, 1945, a quarterly dividend of 30 cents per share in respect of the second quarter of the year 1945 was declared on the preferred stock of the par value of $20 per share of the company, payable June 30, 1945, to stockholders of record at the close of business on June 14, 1945 without the closing of the transfer books.

Puget Sound Nets 85 Cents

Puget Sound Pulp and Timber Company reports a net profit of $295,295 for the first quarter of 1945, consisting of $193,094 non-recurring net profit derived from the second instalment payment on sale of Canadian timber properties after $64,365 for capital gains tax, and $102,201 net profit from operations after $124,913 for Federal taxes.

Net profit from operations in 1944, adjusted to a comparable basis with the current year, amounted to $80,119 after $53,413 for taxes in the fourth quarter, and to $133,245 after $200,874 for taxes in the first quarter.

After providing for the preferred dividend, total net profit for the first quarter of 1945 was equal to 85 cents a share for the common stock, consisting of 59 cents non-recurring net capital gain and 26 cents from operations. Net from operations equalled 19 cents per common share in the fourth quarter of 1944 and 36 cents a share in the first quarter of that year.

National Container Profits Up

Consolidated net sales of National Container Corporation and its subsidiaries for the period January 1 to March 31, 1945, amounted to $4,725,938.77, compared with $4,371,823.64 for similar period in 1944.

Net profit after all charges including estimated federal normal surtax and excess profits taxes totaled $303,425.86 or 45 cents per share for the period January 1 to March 31, 1945, on 660,964 shares of $1 par common stock outstanding, compared with $258,786.76 for similar period in 1944 or 39 cents per share.

For purposes of comparison, earnings per share are based on 660,964 shares of $1 par common stock presently outstanding.

Mersey To Redeem Bonds

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 28, 1945—Announcement has been made that Mersey Paper Company, Limited, of Liverpool, N. S., will redeem on June 25, 1945, all the outstanding 6% general mortgage bonds Series A, at 101.50 and accrued interest from March 1 to June 25. Approximately $1,500,000 of the bonds are outstanding.

The company previously announced that its 5% first mortgage sinking fund bonds would be redeemed on June 15.

To Exchange Hinde & Dauch Stock

The Hinde & Dauch Paper Company has announced that 30,606 shares of $5 preferred stock had been offered to it in exchange for new $4 convertible preferred stock, or slightly more than 85% of the outstanding $5 shares. The remaining 5,294 shares will be redeemed on June 25 at 105 and accrued dividends. An underwriting group headed by Glore, Forgan & Co. and Maynard H. Murch & Co. placed the remaining 5,294 shares of $4 preferred stock.

Offers American Boxboard Bonds

A new issue of $1,750,000 American Box Board Company twenty-year 4½% convertible debentures have been offered by Paine, Webber, Jackson & Curtis and Paul H. Davis & Co. at 103½ and accrued interest. Of the proceeds $744,230 will be applied to the redemption of all outstanding 7% debentures and

HARNESSING THE RAINBOW

Capturing and duplicating the most subtle shades of the rainbow is only the first step in dyestuff application.

The real problem is to harness that color—to make it do a specified job. Breaking colors to harness forms a large part of the work of color specialists of Du Pont's Laboratories. They are constantly striving not only to maintain and improve the quality of production, but also to improve application processes in the dyestuffs industry.

The result of their research is an ever growing stockpile of knowledge, which is at your disposal of paper manufacturers and other users of dyestuffs. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware.

Du Pont Dyestuffs

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...THROUGH CHEMISTRY

DU PONT DYESTUFFS

registered notes on Aug. 1, the sole funded debt prior to this financing, and the remainder will be used with other funds for additions and improvements to plants.

The debentures are convertible at the holder's option into common stock at prices ranging from $16 a share before May 1, 1947, to $20 a share in the two years ending April 30, 1955. The issue is callable in whole or in part at 105% on or before May 1, 1947, and at premiums declining to par after May 1, 1960. A sinking fund commencing in 1949 requires annual payments of 20% of consolidated net income for the preceding fiscal year, with credit for any debentures converted during such year.

Sorg Co. Votes Dividend

Directors of the Sorg Paper Company have declared dividends of $1.50 on the series "A" preferred and of $1 on the series "B" preferred issues, both on accumulation. Payments will be made July 1 to holders of record June 15.

Lily-Tulip Cup Nets 91 Cents

The Lily-Tulip Cup Corporation and subsidiaries, for the March quarter, reports net profit of $195,-917 or 91 cents each on 213,539 capital shares, against $153,652 or 81 cents each on 189,539 shares last year.

Southern Advance Nets $113,694

The Southern Advance Bag and Paper Company for the March quarter reports a net income of $113,-694 on sales of $2,256,064.

West Virginia Profits Off

The West Virginia Pulp and Paper Company for the six months ended on April 30 reports a net profit of $1,145,783, comparing with $1,210,634 in the preceding comparable period. Provisions for taxes on income were $1,801,500, against $2,330,500, and for depreciation and depletion were $1,850,563, against $1,975,444.

Gaylord Nets 37 Cents

The Gaylord Container Corporation for the three months ended March 31, reports a net income of $262,364, after taxes and charges, equal after preferred dividends to 37 cents a share on 542,821 common shares; year ago $268,799 and 38 cents a share on 539,221 shares.

Ruberoid Sales Increase

Net sales of the Ruberoid Company for the first four months were $9,422,327, compared with $9,149,-363 a year ago. The major part of the gain was in April when sales totaled $2,499,997, compared with $2,266,185 a year ago, and was due to improve manpower conditions, enabling the company to dip into the backlog of unfilled orders.

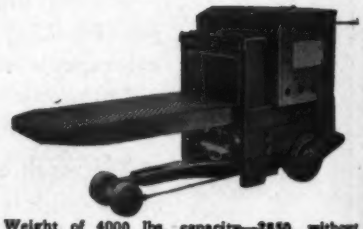
Albemarle Earns $6.59

The Albemarle Paper Manufacturing Company for the year to March 31 reports a net income of $125,-636, or $6.59 a common share, against $134,787, or $7.56 a share, for previous fiscal year; net sales, $5,117,875, against $4,576,955.

WRIGHT-HIBBARD
INDUSTRIAL ELECTRIC TRUCK CO.
INCORPORATED
Phelps, New York

Platform size 24 x 42 x 11" high, low position; 15" high when elevated. Capacity: 2000, 3000, and 4000 pounds.

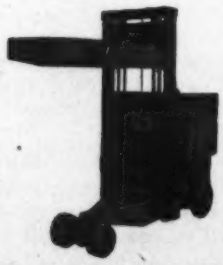
Capacity 2000 lbs. on forks 30" long. Truck turns from a 5' aisle into an intersecting aisle of 5'



Weight of 4000 lbs. capacity—2850, without battery. Truck turns from a 5' 4" aisle into an intersecting aisle of 4'.

Platform 24" wide, 53" long and 11" high, low position. Capacity 2000, 3000 and 4000 pounds

The Wright-Hibbard Telescoping high lift truck is designed to operate in the most congested areas of factories and warehouses. The exceptionally narrow width and short overall length found in other Wright-Hibbard trucks are retained in this model.



Platform 24" wide, 42" long and 9" high, low position. Weight of 4000 lb. capacity—2860 without battery.

Now he buys YARDAGE *— as against weight*

The printer is not the only one who has discovered that opacified light-weight papers impose no war-time hardship. He likes them, and so do all types of paper users who find many advantages in them which the pre-war heavier papers did not possess. The buying of paper by area instead of by pounds may become a permanent practice.

In this situation the notable characteristics of TITANOX pigments stand out as a beacon light to guide the paper manufacturer. Their unexcelled opacity, whiteness and brightness permit production of the kinds of paper favored by consumers—papers of unimpaired strength and with fine printing or writing surfaces—papers that resist after-yellowing.

Perhaps you would like to discuss your post-war plans with our Paper Service Department. We will be most cooperative.

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TITANIUM PIGMENT CORPORATION • *Sole Sales Agent*
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More Pulpwood Needed

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 30, 1945—Greater production of pulpwood for V-boxes, shell containers, bomb bands and fiber drums, and of lumber for wooden containers, is urgently needed for prosecution of the war against Japan, the Forest Products Bureau of the War Production Board said last week.

Pointing out that fiber container requirements have been increased for the third quarter over the second quarter of 1945 by 159,287 tons, and that with reconversion on the way, further increases in the third quarter are indicated, Benton R. Cancell, director of the Forest Products Bureau, said:

"Victory in Europe has actually stepped up forest products requirements for military use in the Pacific."

As direct evidence of the volume of this material now needed, Mr. Cancell said that over 72,000,000 corrugated and solid fiber boxes and interior containers were manufactured in March, out of which 54,000,000 V-boxes were required for overseas.

"Our supply routes have been lengthened to as much as 15,000 miles in instances where supplies will be re-packaged in Europe and shipped to our bases in the Pacific, while supplies shipped directly from the United States must traverse a distance of more than 6,000 miles to Manila, which is still almost 2,000 miles short of the Japanese homeland," Mr. Cancell said.

The long supply routes are going to require more care in packing, according to the Forest Products, Bureau.

"Additional care," Mr. Cancell pointed out, "must be taken to protect supplies from tropical rot developing in the humid conditions in the Pacific."

He said that where no large ports and docks are available to handle supplies, in many instances they have to be floated ashore and stored in the open, subject to tropical storms. All this requires waterproof packaging of the highest type, he added.

Mr. Cancell expressed the opinion that the original goal of 16,000,000 cords of pulpwood, set by WPB as the 1945 quota, may well have to be increased.

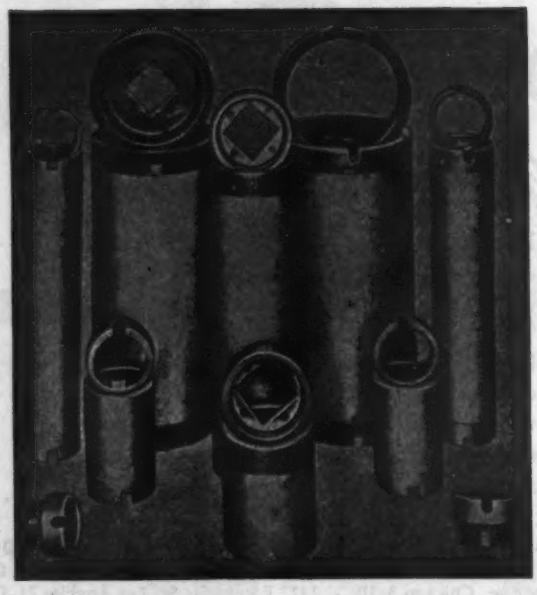
"Pulpwood inventories at mills have seriously declined and first-quarter pulpwood receipts showed a downward trend, which is continuing into the second quarter," he said.

The situation was reported as already acute, and likely to become more serious as time passes and increased demands for the Japanese war continue. In view of this, the combined efforts of all pulpwood producers throughout the year are called for.

Production Ratio Up 7 Per Cent

To make up for the time lost, incident to the celebration of V-E Day, the paper and pulp industry for the week ending May 19, 1945 boosted the ratio of United States paper production to mill capacity by 7% and paperboard production by 3% compared with the ratios of the preceding week, the American Paper and Pulp Association reported May 25.

The ratio of United States paper production to mill capacity for the week ending May 19, 1945, as reported by the American Paper and Pulp Association, was 92.5% compared with 85.4% for the preceding week and 90.7% for the corresponding week a year ago. Paperboard production was 97% for the current week compared with 94% for the preceding week, and 97% for the corresponding week a year ago.



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Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

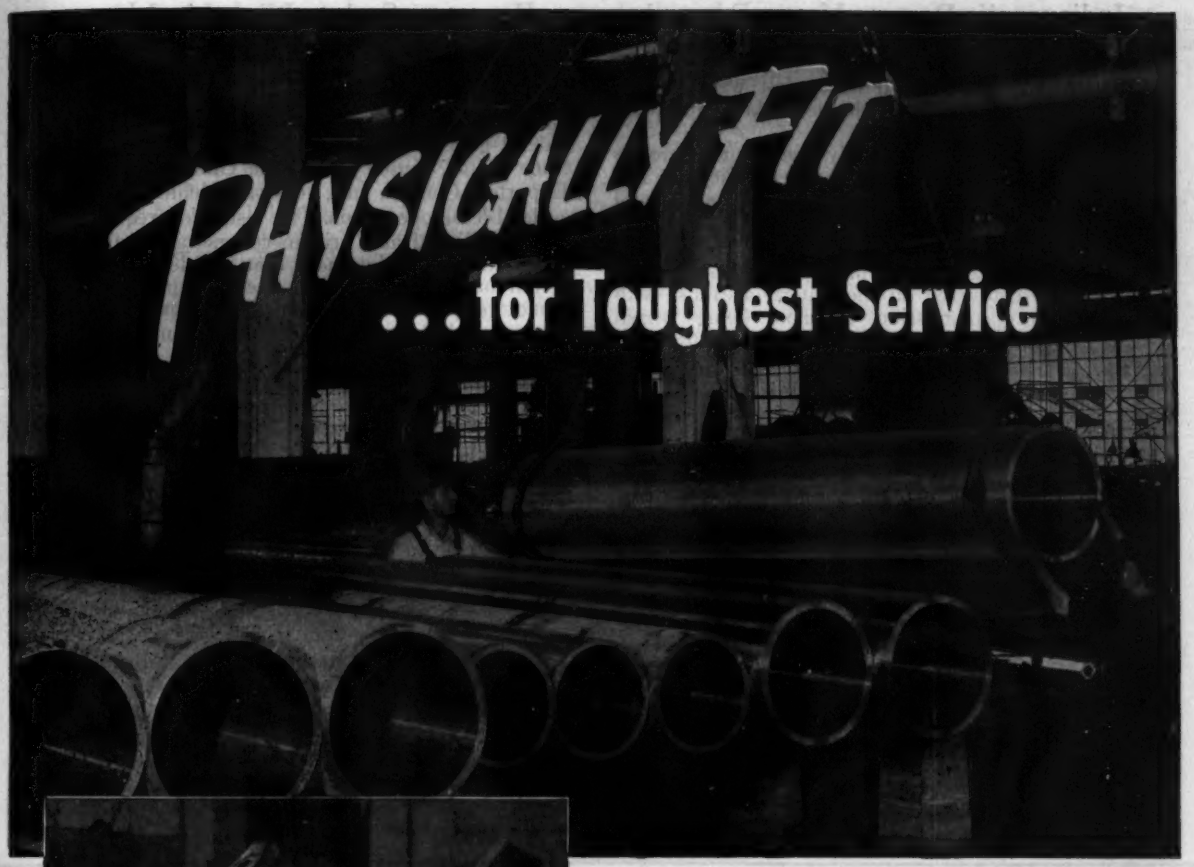
Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.



This large centrifugally cast cylinder, is being precision finished in the Shenango-Penn machine shop which is equipped with a wide range of modern machine tools for the fine finishing of castings, large and small. Above—Large sleeves ready for shipment.

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"CAST centrifugally by Shenango-Penn" has plenty of meaning to users of rolls, roll covers, bushings, bearings, sleeves, liners and other tubular parts. It means castings with higher tensile strength, greater density, uniform grain structure and a welcome freedom from porosity, blowholes, sand inclusions and other structural defects. It means machinery and equipment parts that will outwear and outperform ordinary castings of the same analysis by a wide margin . . . and at a lower cost per part.

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ARMY NAVY

ALL BRONZES • MONEL METAL • ALLOY IRONS

Indianapolis Reports Heavy Demand

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., May 21, 1945—Civilian demand for paper continued heavy last week for all grades in the paper list, with the backlog of orders continuing to mount.

Box demand was particularly heavy and factories continued to work to the limit of production. The labor situation remained unimproved, but most local executives feel that in a couple or three months, when the flood of discharges return from Europe and other places there will be more in the labor pool. Indianapolis continued on the critical area list with the manpower commission, all labor being frozen to the jobs. Some other cities of the state, however, have been removed from the critical list due to cutbacks in government contracts. It is believed that others soon will be removed from the list.

This season promised to be one of the slowest in history for summer specialties. The spring virtually was non-existent with temperatures hovering around the 50s and all thoughts of the out of doors were deferred. Lack of gasoline and tires further will discourage the trade. However, demand for tissues, paper towels and napkins continued extremely heavy due to linen shortages. According to local hotel men, a good serviceable paper sheet would fill a crying need.

The present outlook for roofing and building paper is much better than it was a year ago. Not only here, but in other sections, government agencies are permitting more construction, particularly dwelling, both low and medium priced. Most jobbers have fair stocks on hand, it is reported.

Demand for paper stock and rags continued heavy for all grades with all prices at ceiling levels.

Exporters Seek to Limit Lend-Lease

In a resolution addressed to members of the House Foreign Affairs and Ways and Means committees and to the Senate Finance and Foreign Relations committees, as well as to the executive heads of several federal government agencies concerned with foreign trade of the United States, the United States Paper Exporters Council, Inc., advocates definite limitations on lend-lease operations. The resolution requests that well established and private commercial channels of distribution be maintained; that lend-lease be limited to purchase and supply of such defense articles as cannot be procured and distributed through private channels; that commercial trade channels be used where foreign-owned funds or credits are available for the purchase of civilian requirements from this country. It also warns of the dangers of permitting the activities of governmental agencies to go beyond the scope of war exigencies and to prevent or delay unduly the resumption of private foreign trade contacts.

To Combat Forest Fires

Warned by the experiences of last year, the New Brunswick Government this past week has declared all forest lands in the province to be a protected area from now until November 1st. Under the order no person may enter forest areas without a permit. This is done so that the Fire Rangers' Department may have strict control over the location and movements of sportsmen and campers and warn all against carelessness in smoking and on the importance of completely extinguishing camp fires.

PAPER MILL OPERATORS!

Are you interested in—

CONTROLLED PARTICLE SIZE AND SETTLING RATES FOR LIME, BY METHOD OF REBURNING AND SLAKING?

Write us making appointment to have a talk with our engineer.

TRAYLOR ENGINEERING & MANUFACTURING CO.

ALLENTOWN, PENNA., U. S. A.

M. & O. Refunds Mortgage; Elects Davis

MINNEAPOLIS, May 28, 1945—At the annual meeting of the Minnesota and Ontario Paper Company, approval was given to a proposal to refund the balance of approximately $6,000,000 of the company's 5% income bonds and to authorize a new mortgage and the issuance of $6,000,000 of new mortgage bonds.

The new bonds will bear interest at approximately 3% with maturities extending over fifteen years. The plan reduces annual interest charges by approximately $120,000 and reduces annual bond retirement which have averaged $1,450,000 per year for the preceding four years, to an average of $400,000 for the next 15 years. The purpose of the refinancing plan is to make available funds for other corporate purposes essential to the welfare of the company, particularly in respect to necessary improvements and expansion of properties and anticipated postwar requirements.

Shareholders elected to the board of directors: Messrs. D. D. Davis, J. B. Faegre, S. S. Ford, C. T. Jaffray and R. H. M. Robinson, all of Minneapolis; and C. S. Garland, Baltimore; F. M. Gordon, Chicago; S. Semenenko, Boston; G. A. Dobbie, Galt, Ontario; and R. S. Waldie, Toronto, Ontario. Robinson was elected chairman of the board, and D. D. Davis was elected president of the company. Other officers of the company were re-elected including: R. W. Andrews and C. T. McMurray, vice-presidents; Ralph D. Main, secretary-treasurer; and Frank J. Hickling, comptroller.

Mr. Robinson has been associated with the Minnesota and Ontario properties for the past 14 years, coming to the company in 1931 when he was appointed a receiver and later co-trustee and managing receiver. In 10 years after he assumed office Mr. Robinson was able to bring the company out of receivership, and upon reorganization in February 1941, he was elected to the presidency.

Mr. Davis, prior to joining the company last November was vice-chairman of the War Production Board in Washington for two years, after serving as president of General Mills, Inc., since 1934. He joined the U. S. Army air service in 1917, serving as a major until the close of World War I. He served as manager of the industrial department of the Liberty National Bank and the New York Trust Company, New York City following the war, and in 1922 became secretary of Washburn Crosby Company in Minneapolis. In 1934 he was elected president of General Mills, Inc.

To Register Patents Available

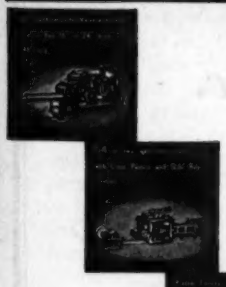
[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 21, 1945—The Patent Office, in the Department of Commerce Building here, is establishing a public register of patents available for licensing, to aid manufacturers in finding new products for manufacture during the reconversion period, and after the war.

Registrations will be effected at the request of patent owners, it is stated, and will be published when registered, in the weekly official gazette of the Patent Office, which is available for review in many public libraries throughout the United States, and otherwise given wide circulation.

Establishment of the registration list, it was said, was recommended by the National Patent Planning Commission to provide patent owners a means of informing manufacturers of their willingness to grant licenses for patent use.

SINCE 1828 — CONTINUOUSLY WE HAVE SERVED THE PAPER INDUSTRY.

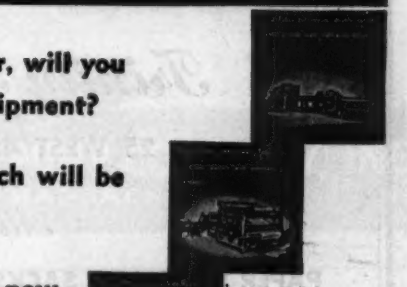


The war is not over. But when it is over, will you be among the first to receive new equipment?

We can now book approved orders which will be filled in the order received.

Some will have to wait—so plan now to be the first.

Paper Bag Machines
Paper Machines Jordans
Paper Trimmers—new model E.



THE SMITH & WINCHESTER
MANUFACTURING COMPANY
PLANT AND OFFICES AT SOUTH WINDHAM, CONNECTICUT

April Pulpwood Receipts Lower

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 30, 1945—Total receipts of pulpwood at U. S. pulp mills during the month of April 1945 were 1,199,600 cords, approximately 3% below the April 1944 level, the War Production Board announced today. Total wood receipts for the first four months of 1945 were 5,331,900 cords or 5% less than in the same period in 1944, according to the WPB Forest Products Bureau.

High water and unfavorable weather conditions, which continued to prevail in the Southwest and Pacific Northwest Regions during most of April, were said to have caused further reductions in wood receipts at mills in those areas.

Domestic production of pulpwood must be increased during the remaining months of 1945 if the heavily increased demands of the armed services and the essential home-front war needs for pulp and paper products are to be met, Forest Products Bureau officials said. The essential requirements for pulp and paper products have not been lessened by the end of the war in Europe, and heavily increased production of pulpwood is necessary to the successful prosecution of the Japanese war, the bureau explained.

The current pulpwood situation was outlined as follows:

April receipts of domestically produced pulpwood amounted to 1,124,400 cords or about 3% below those of a year ago and 18% below March of this year. Total imports for April were 75,200 cords.

Domestic receipts in the Northeast Region are up 37% above those of April 1944. However, Northeast mills are in great need of the maximum possible production of the long-fibered species.

April imports of Canadian pulpwood in the Northeast were approximately 49,500 cords, 6% greater than in April 1944. Facilities for rail shipment of wood from Canada improved somewhat during April.

Inventories in the Northeast Region are about 17% below April, 1944. This is an extremely critical inventory position, representing a drop of about 55% below the inventory level of April 1941.

April domestic receipts in the Appalachian Region were about 5% below those of last April. However, April domestic receipts were 13% above March 1945. The situation in this region is precarious, and heavily increased production of pine, chestnut and other hardwoods is needed in this area.

Overceiling Sales Draw Fine

Daniel P. Woolley, Regional OPA Administrator, last week announced that Harry B. Slavin, wastepaper dealer of Dayton, Ohio, was fined $250.00 and placed on six months probation by the United States District Court at Harrisburg, Pa., for overceiling sales of wastepaper. Slavin, doing business as Penn Paper Trading Co., at Austin, Pa., was charged with upgrading transactions in the sale of wastepaper to the Williamson Pulp and Paper Company. Slavin pleaded nolo contendere.

CIO Wins Rights at Whippany

The Paper Workers Organizing Committee, CIO, has won exclusive bargaining rights for the employees of the Whippany Paper Board Company, Whippany, New Jersey. The vote was 61 for PWOC-CIO to 4 for District 50, United Mine Workers.

TRADE MARK

Trinity Bag & Paper Co., Inc.

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PAPER BAGS AND SACKS
All Types and Styles
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Agents for:

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BAG PLANTS AT MOBILE, ALABAMA, AND MONROE, LA.

B. C. Production Hits Peak

Pulp and paper production in the province of British Columbia during the year 1944 was valued at $30,391,000, which makes it the peak year as the previous high mark was $27,723,000 in 1941. The ten-year average production value from 1935 to 1944 was $20,476,800. Pulp woods exported from the province during 1944 reached a value of $35,000 as compared with $16,000 valuation in 1943. The ten-year average in pulp exports was $9,900.

Newsprint production in British Columbia last year was 236,696 tons as compared with 211,696 in 1943, 252,559 tons in 1942 and 275,788 tons in 1941. The ten-year average production for newsprint was 238,567.

Production of other types of paper in British Columbia, which rose steadily from 1937 to 1942, showed a slight drop in 1943 with 63,026, but rose again last year with a total of 74,038. The ten-year average production was 57,110 tons.

In addition to 295,595 tons of pulp manufactured into paper in the province of British Columbia, 170,192 tons were shipped out of the province during the year for final processing elsewhere.

New Laminating Wax

A new, light-colored laminating wax, for use in producing moisture-resistant food containers, has just been made available by the Witco Chemical Company. The wax is obtainable in large quantities without allocation.

The new product, known as Witco Hamp Wax No. 62, has been formulated in the Witco laboratory to provide low moisture transmission and good grease resistance qualities. It is a straight petroleum wax, non-resinous, light in color, with a melting point of 160-165° F. It is claimed to have excellent laminating properties suitable for the production of food containers, paper boxes, and Grade "C" Ordnance Wrap.

Witco Hamp Wax No. 62 is packaged in 90 pound fibre containers which are easily stripped, and also is available in tank car lots. Full information may be secured from the Technical Department of the Witco Chemical Company, 435 North Michigan avenue, Chicago.

LIGHT-COLORED LAMINATING WAX IS NOW AVAILABLE WITHOUT ALLOCATION

Spain Uses Domestic Wood

During the latter part of 1944, land communications with Northern Europe, the chief source of raw material for the Spanish paper industry, were severed and as a result experiments in the utilization of domestic woods are now being intensified, says a report received by the Department of Commerce. Mills do not expect an immediate shortage of raw materials although production has been curtailed somewhat.

Approximately 14,000 workers are employed in the industry's 200 plants and production of paper and paperboard in 1943 amounted to 116,000 tons as compared with 135,000 tons in 1942. Substantial imports in the first six months of 1944 enabled mills to increase production temporarily but it is said a steep decline set in soon afterwards.

A WELL ENGINEERED INSTALLATION AT S. D. WARREN COMPANY, MANUFACTURERS OF QUALITY PRINTING PAPERS, CUMBERLAND MILLS, MAINE . . . ASSISTED BY A WARREN PUMP.

Paper Mills place a premium on reliability and performance. At Cumberland Mills the plant hydraulic elevator pump has a dual drive turbine and synchronous motor.

The turbine driver is used to regulate heat balance and to supply process steam. Pump requirements are thus served with by-product power. The synchronous motor generates when the steam demand exceeds the pump load and operates as a motor when the demand is less. Pump power costs are reduced to a minimum.

In addition to building pumps for every paper mill service, Warren cooperates with plant engineers in working out money-saving installations.

WARREN PUMPS

ARMY E NAVY

WARREN STEAM PUMP COMPANY, INC.
WARREN, MASSACHUSETTS

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

EMPIRE STATE SECTION. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

CHICAGO PROFESSIONAL PAPER GROUP. Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

PAPERBOARD DEMAND HEAVY

Increasing demand for paperboard in the third quarter are indicated by current reports of all-over requirements. This situation also applies to paper used as raw material for packaging. Relief, however, seems assured in the expected reversal trend of wood pulp shipments, with the resumption of Swedish exports to diminish the relatively large tonnage shipped from this country and from Canada to European ports. Although no definite estimate of the tonnage of wood pulp which Sweden will ship to this country is expected to be known before July 1, relief appears in sight to ease the extremely tight pulp and paper supply situation. More direct relief will be afforded if OPA prices are acceptable to foreign sellers. If the 5% increase in OPA prices is not granted and Sweden should ship more pulp to more profitable markets in Europe, indirect relief will result through decreased shipments from the United States and Canada. The outlook at this date appears favorable for increased supplies of pulp in the third and final quarters of this year to provide a more adequate supply of paper and paperboard for civilian consumption.

Paperboard production has continued to hold to a high and steady level. Total output for the first 1945 quarter was 2,235,000 tons, against an authorized minimum output of 2,372,000 tons and 982,000 tons of wood pulp were allocated. This represents an increase of 1.7% over the first 1944 quarter. Among the major types of paperboard the percent of changes, 1945 from 1944, are as follows: folding boxboard, 544,000 tons, compared with 511,000 tons in 1944, an increase of 6.5%; cardboard, 18,000 tons, compared with 17,000 tons in 1944, an increase of 2.3%; containerboard, 1,036,000 tons, compared with 1,018,000 tons in 1944, an increase of 1.7%; buildingboard, 279,000 tons, compared with 275,000 tons in 1944, an increase of 1.2%. Decreased output in the first 1945 quarter, below the 1944 first quarter was reported by the Department of Commerce in set-up boxboard, 174,000 tons, compared with 183,000 tons in 1944, a decrease of 4.9%; in miscellaneous board, 196,000 tons, compared with 194,000 tons in 1944; a decrease of 1.2%, and in tube stock, 126,000 tons, compared with 129,000 tons in 1944, a decrease of 2.3%. Although total production during the first quarter of 1945 was nearly 2% larger than in the corresponding quarter in 1944, it was 6% less than the authorized minimum production. Bad weather in the South in the early months of the year, with floods in the western part of the area hampered output.

Containboard requirements for the manufacture of V-boxes in the third quarter, the Paperboard Advisory Committee of the WPB reports, will probably be 364,000 tons, or approximately the same as current output. Reviewing second quarter allocations of board to V-box manufacturers, the report stated that April allotments totaled 120,029 tons of solid and corrugated board, while May allocations amounted to 121,727 tons, with contemplated allocations of about 120,000 tons for the month of June. At the conclusion of a discussion of operations under Paperboard Conservation Order M-290, the committee recommended that the order be modified, beginning in the third quarter, to permit mills, after they have filled basic orders for containboard equal to 95% of their required production, to sell incentive tonnage to any box manufacturer.

Members of the committee requested consideration of the WPB of equipment problems, even though the machinery control Order L-83 has been revoked. It was stated that while most of the containboard plants will not have to reconvert, manufacturers of fiber containers will have to change some equipment and install new machinery to meet new civilian packaging requirements. Industry members said that mills could produce more paperboard and containers if adequate replacement equipment was made available. After three years of operation, it was stated, much of the machinery needs more than ordinary repairs. A representative of the Quartermaster Corps, who had toured European fronts recently, reported that V-boxes were standing up well, even when stored in the open. He reported that there had been no failures or breakage on sleeved V-boxes attributable to poor containerboard. V-boxes were reported to have withstood the severe treatment in handling to which they were subjected and also other severe tests, such as closed storage facilities, bad weather conditions, inexperienced labor, open transportation and continual rehandling and shipping. The industry may be proud of its accomplishments, he said, and added that the need for V-boxes will continue in Europe until dry storage facilities become available for military supplies.

Production of V-board in March, 1945, totaled 98,854 tons, of which 70,102 tons were kraft liner and kraft corrugating; 17,213 tons jute, and 11,039 tons container chip. Total production of V-boxes, sleeves, and interior packing for March, 1945, was 54,027,817,

of which 38,237,405 boxes were of solid fiber. This output was fabricated in 82 plants, 47 of which turned out solid fiber boxes, with some plants manufacturing more than one type of V-box.

Military requirements for containerboard have made the civilian supply tighter than in any other type of paperboard. The current supply is about 63% of what it was during the last quarter of 1943. The supply of of corrugating board is not as tight as in that of liners which is down about 50% of the amount available in the last quarter of 1943. The result is that the supply of shipping containers for civilians is about half of what it was in the 1943 period.

ANPA Reports Newsprint Use Up

Daily newspapers reporting to the American Newspaper Publishers Association consumed 203,234 tons of newsprint paper in April 1945 compared with 201,136 tons in 1944 and 256,431 tons in 1941. This was an increase in April 1945 over April 1944 of 1.0% and a decrease under April 1941 of 20.7%. The year 1941 is the base for calculating allowable use by newspapers. The total estimated newsprint consumption in the United States for April 1945 was 280,323 tons which includes all kinds of uses of newsprint paper. For the first four months of 1945, it was estimated to be 1,056,953 tons.

During the first four months of 1945 the reporting newspapers used 766,291 tons of newsprint, a decrease of 1.8% under the first four months of 1944 and a decrease of 20.5% under the first four months of 1941. Stocks of newsprint paper on hand with newspapers reporting to the ANPA were 43 days' supply at the end of April 1945 which was a decrease of 3 days' supply from 46 days on hand at the end of March 1945.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1945		Corresponding Weeks—1944	
April 14	87.4	April 15	84.7
April 21	90.7	April 22	89.7
April 28	88.0	April 29	89.8
May 5	90.7	May 6	88.9
May 12	85.4	May 13	87.6
May 19	*92.5*	May 20	90.7

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	88.2	92.5	90.6	82.4	88.1
1945	86.7	89.4	90.2	*88.1*									

COMPARATIVE YEARLY SUMMARIES

	1938	1939	1940	1941	1942	1943	1944	1945
Year to Date..	67.6	80.2	86.0	92.1	101.8	89.0	88.3	*88.5*
Year Average..	71.5	83.4	85.6	97.4	90.4	87.8	88.1	

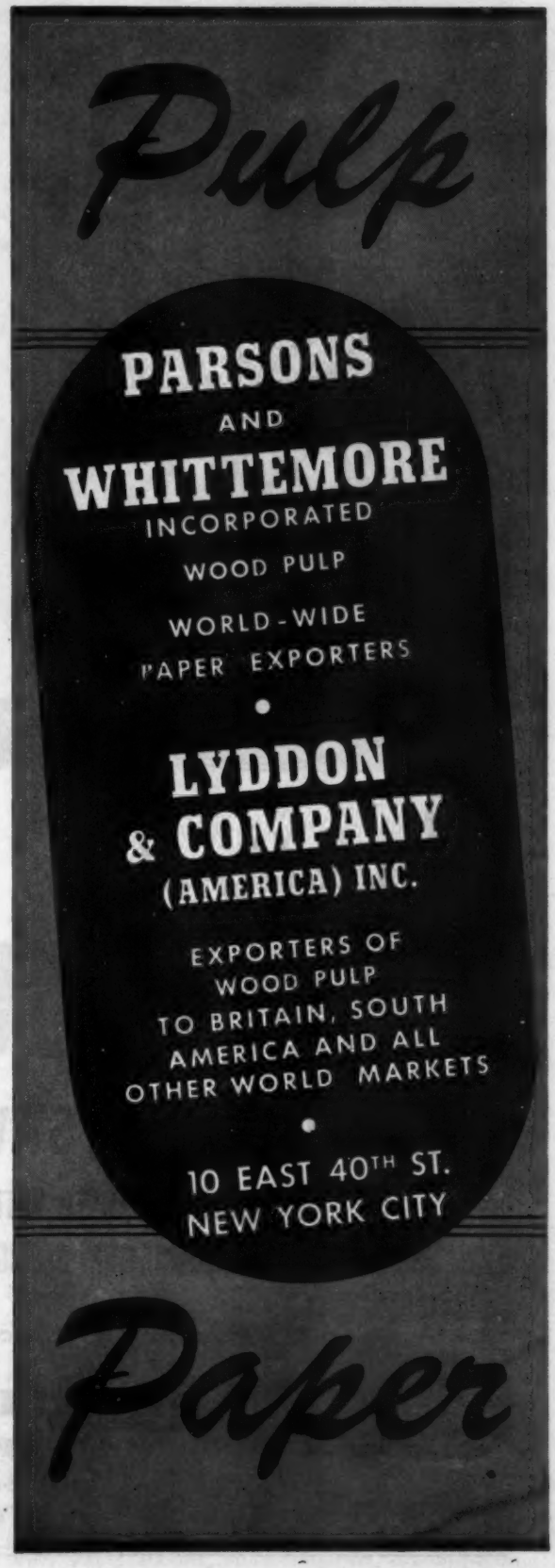
* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

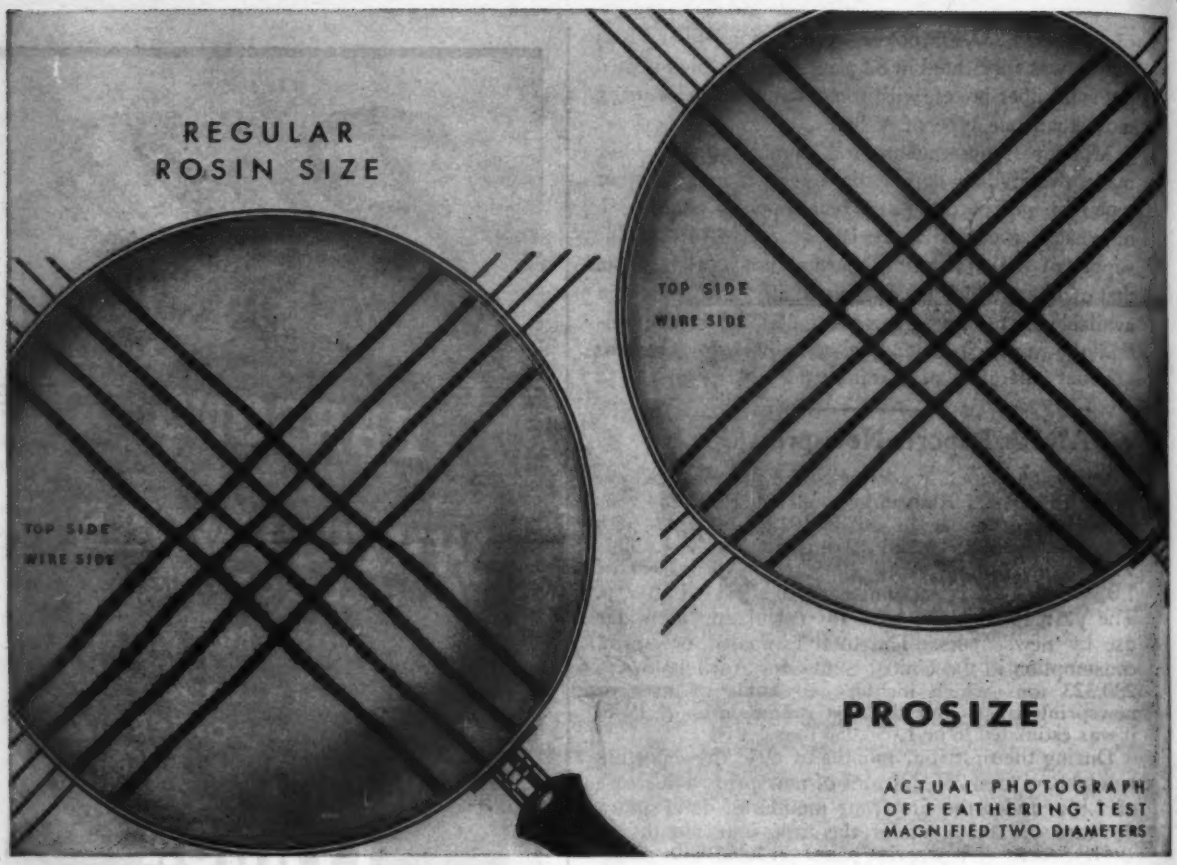
PAPERBOARD OPERATING RATIOS†

Current Weeks—1945		Corresponding Weeks—1944	
April 14	97	April 15	92
April 21	98	April 22	98
April 28	99	April 29	98
May 5	97	May 6	98
May 12	94	May 13	95
May 19	97	May 20	97

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	90	96	95	96	96	96	85	96	92	95	95	85	93
1945	91	95	97	97									

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.





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Trends in Paper Machine Design*

By H. C. Moore[1]

Abstract

The tendency is noted that papermaking machinery is being manufactured according to the specifications required for particular types of paper.

Machine drives are discussed; a line shaft mounted on heavy duty roller bearings and driven by a single motor, turbine, or engine being preferred by the author. This is augmented by helper drives to carry the load of particular sections such as for the pick-up felt and for dual presses.

The press section, reels, and couches are mentioned. The suction primary couch is a new development for fourdrinier machines. This involves the use of a second suction couch installed in place of the guide roll. Its action is given.

The paper industry, as compared with the steel, machine tool, automobile industry, etc., is reported to be the 7th largest in the country in volume of sales, yet, to be exact, it isn't really an industry at all but a group of them with a number of common problems and some confined to closely defined branches.

It could be said that the aim of the machinery builders is to keep abreast of the expanding requirements of the paper industry. As machinery builders, we are constantly impressed by the tremendous virility of the industry, its constant striving to develop a better product and to make it faster. In the past ten years the added emphasis on the technical approach and the closeness of controls all through the operation have probably been a big factor. There has been the complete revision of speed limitations on many grades which had been considered insurmountable for years; accompanying this in almost every case have been marked improvements in sheet characteristics.

The author had the pleasure of visiting a mill in the South whose latest kraft machine is capable of producing 600 tons per day. In 1938 the highest production on these grades was slightly over 400 tons. Book has been made at speeds up close to 1,000 feet per minute. As a matter of contrast it is interesting to note the vast difference in characteristics of a machine making kraft at 600 tons per day and a tissue machine, operating at even higher speeds, at a rate of 25 to 30 tons.

A trend certainly important enough to mention in the industry is that of specialization. Inquiries are still received from foreign countries on a single machine to produce kraft, book, bond, wrapping, news, etc. Actually there are two machines in Cuba capable of making almost the entire range of grades. However, as the mills go up in speed and strive constantly for the desired sheet characteristics, a degree of perfection is reached that is hard to match. As machinery builders, it is believed that our job is to work out the detailed machine requirements at the mill and in our engineering department. Sales and other factors enter into this consideration but it is certainly safe to say that the trend is definitely toward more and more specialization in the design of post-war machinery to meet specific requirements. An example, which is familiar to all is the Rhinelander machine. It is not necessary to comment on the farsightedness of the Rhinelander management in going all the way to complete a project for satisfying their particular sales need. The new machine is not the best book machine or kraft machine or bond machine but the design features incorporated in it are of such a nature that it is eminently suited for steady, well controlled operation on greaseproof and glassine grades with a minimum of down time and operating difficulties.

Paper Machine Drives

To get back to some of the more general problems of the paper machine, one of the first that comes to mind and one common to all grades is the drive. There is no question that the post-war period will see a demand for smoother, faster, and safer continuous operation of machines with a minimum of upkeep. A drive will be required that is flexible enough to meet machine requirements and responsive enough to give speedy and accurate adjustment. In other words, the drive should in no sense be a deterrent to whatever in the way of quality and production of which a machine is capable. The following requisites of a good drive are worthy of mention:

1. It must be capable of maintaining the desired draw between sections. It is a source of wonder to the uninitiated to be informed that the sheet carries 80% water content in the transfer on an open draw between the couch and first press. In case of a draw that is not steady, it is not unusual for the operators to maintain draws on the tight side so that the sheet does not wrinkle when it slackens. This is harmful to the sheet and opens the door to cockling and strength depreciation.
2. The drive must be capable of maintaining a steady machine speed at all times to avoid sheet weight fluctuations.
3. Absence of vibration is essential to safe running. Mills generally have initiated programs of replacing old core gear drives with new modern drives. This often solves another problem—power consumption. Where changes or other additions are being made

* Presented at the meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry held in Appleton, Wis., Nov. 14, 1944.

[1] Vice Pres. Beloit Iron Works, Beloit, Wis.

to the machine it is usual to expect that in replacing the old type of core gear drive a power saving of 10 to 15% can be realized.

4. Ease of adjustment and quick response to adjustment, with freedom from interruption of machine operation are other factors which are essential if every minute of operating time is to be utilized to the fullest advantage.

MECHANICAL DRIVES

In analyzing this problem for many types of grades and machines, it is believed that the mechanical drive comes closest to satisfying requirements. The backbone of this drive is a sturdy, heavy duty lineshaft, extending the full length of the machine, with individual mechanical drive units at each section. This lineshaft is mounted in heavy duty roller bearings and driven by a single motor, turbine, or engine. In this type of drive it is possible to attain a speed range of 10:1 or even more. The engine drive is not suitable usually for quite as great a range but a number of them are giving a pretty good account of themselves.

This type of drive, utilizing cone pulleys and the hypoid or spiral gear unit at each section allows adequate draw adjustment for the range of grades to be run. This type of set-up is, in our opinion, the most positive obtainable. It is not unusual in case of a power failure to see a machine coast to a stop without a break in the sheet. On such delicate sections as the size press, coating units, breaker stack, and the dry end, generally where the sheet has lost a lot of its elasticity, this stability of draw is particularly important.

The use of motor operated belt shifters on the front side of machine allows for quick and positive changes of draw at each section.

A very important characteristic of the modern mechanical drive is its simplicity. In spite of the fact that it is most flexible and gives quick and accurate response to adjustment, its component parts are easily understood. The operating and maintenance people of the mills find no difficulty in making any necessary adjustments and in case of trouble anyone can readily locate the source of the difficulty.

CLUTCHES

The newly developed Beloit air clutch is a good example of the combination of simplicity and flexibility. It keeps the advantages found in the mechanical clutch of large friction area, generous heat dissipating capacity, and ease of inspection or replacement of the friction surfaces. Through the substitution of a low-pressure air diaphragm for the older mechanical control arrangements and the use of a simple air controller, the new clutch can be readily set to start and bring its section of the machine up to operating speed very smoothly. It is used to eliminate the possibility of damage being done to drive and machine parts if the operator is heavy-handed, forgetful, or just in a big rush. Another favorable feature is that the new clutch is self-adjusting. It automatically compensates for wear of the friction plates and will maintain correct contact pressure without adjustment.

HELPER DRIVES

In discussing the mechanical drive thus far, its general characteristics have been emphasized. Going a step farther, we have a good example of the fact that the papermaking machine must be suited to its particular job. We have actively pioneered the use of the electric helper drive in conjunction with the mechanical drive. A common example of this arrangement would be a machine equipped with a pick-up felt to convey the sheet from the couch through one or more presses and deliver it to a Yankee drier, creping drier, or transfer roll. The pick-up felt acts to synchronize these sections and the real requirement is to supply each section with enough power to maintain the desired felt tension. Under these conditions a very effective drive arrangement consists of one mechanical drive unit installed at the section where the heaviest power load is carried, this unit being tied in mechanically with the dry end of the machine and electric helper units at the other sections. The electric control of the helper units is so arranged that all sections start or stop wtih the main, mechanically driven section and the desired felt tension is maintained throughout the entire speed range of the machine.

In addition to the pick-up felt application mentioned, electric helper drives as auxiliaries to the mechanical drive have been worked out to good advantage for the wet end of cylinder machines and for dual presses.

DRIVE VARIATIONS

There are other variations of the more standard mechanized drive arrangement to meet certain mill requirements or conditions. One of these utilizes V-belts between the lineshaft and individual gear units. This is in line with applications previously made on winders and in various sections of machines. A complete installation of this type of drive is to be made in a Wisconsin mill within a very short time. Another, the "no-belt" drive, has certain features which will make its use advantageous for certain installations.

Press Section

Moving on to the press section, the design is found to be functional depending on the grades to be run. The dual press, with which all are generally familiar, has been successful on many grades, including the following: Kraft paper and board, groundwood sheets, waxing, book, bond and writing, coated, etc. Here again the design can be varied to serve definite purposes. On kraft and groundwood sheets, it has been particularly advantageous to use suction rolls in both the first and third roll positions— the first roll usually being equipped with a double box. This has resulted in a dryer sheet, and by using the vacuum effect of the third roll to take the sheet off the center roll, much safer running has been accomplished. On high speed board machines, two dual presses with three suction rolls will be recommended for higher production. On certain book and bond grades, the third roll is a plain rubber-covered roll to void the danger of shadow marks.

Still another variation of the dual press, which has worked well and is of possible interest, utilizes the first horizontal nip with a double box in the suction roll and a soft rubber roll above it. This is followed by a horizontal reverse second press.

Of greaseproof or glassine grades, what might be termed the Rhinelander close-center press has definite merit. This allows a number of presses in a short space, with the benefit of short draws, a convenient felt changing arrangement and on existing machines very interesting possibilities of more press capacity, longer wire, additional driers, etc.

On tissues, the rubber-covered suction press has probably been one of the papermaker's greatest blessings. Where substituted for a plain press it has resulted in remarkable increases in speed. More recently, the use of a second suction press on high speed machines again made possible an important

speed increase. One mill recently advised that on about a 12.5 pound sheet they were able to increase speed from 1200 to 1400 feet by the addition of a second suction press.

Along the line of refinements, a new air operated felt guide has been developed as an answer to the problem of guiding felts at higher speeds. It promises to have use in a number of applications. We have on the drawing boards a new combination pneumatic mechanical loading for the dual press and other press arrangements which will tie in well with the pressure mechanism now in use in a number of applications.

Reels

The paper machine reel in like manner must be designed to suit the requirements. A reel has been developed which has proved very successful in making large diameter rolls on kraft and cylinder machines but it proved to be unsuitable for book which requires a soft reel for the elimination of corrugating. For the sulphite grades, such as book, bond, writing, and for coated papers, the centerwind reel followed and has proven successful in all of its applications. This makes possible the backing away of the roll from the drum on the secondary arms and the building up of the roll by the centerwind arrangement. This reel has the added advantage that it can be operated if desired in the conventional manner. On tissue and waxing, the Beloit transfer type reel has proven successful.

As a sidelight, the electric drive for the centerwind reel presented a rather interesting problem. As can be imagined, it must have a speed range suitable for the entire paper machine speed range plus that necessary to build a roll up from the small diameter at the start to 50 inches or more. By working this out in detail, a compact, readily adjusted drive has been developed which will automatically maintain any desired degree of tension in the finished reel.

Couches

The Beloit suction primary couch is a new development for fourdrinier machines and a few remarks regarding its principles of operation will be of interest. One unit was installed on a large kraft machine just prior to the war period and from the results obtained it is believed that it will prove to be a very important contribution and one that can be used to advantage in many different types of machines. If you will think of a conventional fourdrinier having the guide roll after the suction boxes and with the wire pitching down from the guide roll to the regular suction couch, you will have a picture of this new installation by simply considering that a second suction couch of the same size as the regular one is installed in place of the guide roll. The guiding of the wire is accomplished on the return run of the wire from the main couch to the breast roll and by installing the suction primary couch at the position mentioned above, sufficient wrap of the wire over the new roll is secured to permit using a good width of suction area in the roll.

Now, consider the regular suction couch, which shall be called the main couch, and the manner in which it normally operates—the sheet is removed from the wire after passing over its vacuum area and it is known that the sheet cannot be taken away to the first press until the sheet and wire have passed the vacuum area and the vacuum has been broken by air coming from the inside of the suction couch roll on the far side of its vacuum box. Obviously the sheet could not be removed from the wire if the vacuum were still holding it firmly on the wire. All are familiar with the fact that for good operation it is essential to carefully set the position of the suction box in the main couch and regulate the draw of the sheet away from the wire, because if the sheet is left on the wire after the vacuum is broken a certain amount of water which remains in the holes of the shell is thrown back into the sheet. All are familiar with the trouble which results when a streaked flow of water on the wire results in a wet "tail" coming down from the suction boxes to the main couch. At this streak, there is an abnormally large amount of water to be handled by the couch and often this results in water being thrown back into the sheet at this point and a break occurs. This well-known condition at the main couch has been elaborated upon in order to illustrate the change in conditions when a suction primary couch is installed.

With the suction primary couch a saveall is installed, much like that which is used with a suction press roll. Since the wire carries the sheet away from the suction primary couch on its travel down to the main couch, the suction box area in the primary couch can be set so that the vacuum acts to hold any water in the holes of the shell until the wire and sheet are safely away from the primary couch. This is clearly illustrated in operation by the fact that the suction primary couch throws water from its holes into the saveall in the same manner that a suction press roll throws into its saveall. The suction primary couch acts to handle much larger water quantities in the sheet than could ever be handled with a single, main couch installation and this means that the suction flat boxes under the wire do not have to remove as much water as in the conventional installation. As would be expected, the new suction primary couch has resulted in an improvement in wire life.

By having this two-stage operation of suction couches, the primary couch to handle the sheet in its wetter condition and the main couch to finish the action, a very good improvement in dryness is obtained for the sheet leaving the wire. Then there is a very gratifying condition that it is no longer as necessary to closely regulate the water condition at the suction box section of the wire because the primary couch takes care of any variations, and the removal of the sheet from the wire at the main couch is no longer the very sensitive type of operation which all are familiar with in conventional installations. Additional installations of the new primary couch arrangement are expected in the near future and more detailed information on the various characteristics will be available before very long.

It is advantageous to divide the power input to the fourdrinier between the main couch and the primary couch but since the primary couch has only a partial wrap of the wire on the roll, the power supplied would cause this couch roll to slip in the wire if its vacuum were not established. By using a helper type electric drive at the primary couch and using a special controller in connection with this drive, it is possible to moderate the power input as the machine is being started and then build up the power automatically as the vacuum builds up in the primary couch after the sheet has formed on the wire and sealed the roll. This is a good example of the use of an electric drive to supplement the mechanical drive so that each is used to the best advantage.

Weatherproof Solid Paperboard*

An Evaluation of the Quality of Commercial Boards and the Development of an Improved Weatherproof Board*

By F. A. Simmonds[1], J. N. McGovern[1], and C. O. Seborg[1]

Abstract

Commercial weatherproof solid paperboards of the V-type were evaluated particularly for rigidity (bending modulus) and resistance to failure at the score (Carlson score-strength number), before and after immersion in water for 48 hours, and for water absorption. The V-boards, after immersion, had values for bending modulus and score-strength number that were 25 to 30% of the dry values. V1s boards showed score-strength numbers twice those for V3s boards, but had the same bending modulus.

The best experimental boards, made from either commercial jack pine or Southern yellow pine kraft pulps, were, when wet, twice as rigid, three times as strong in score strength, and, at equilibrium, absorbed from 25 to 51% less water than did the commercial boards having the best values for these properties. Furthermore, all of these improved properties were obtained in individual boards, whereas the respective best values used for comparison were each found in different commercial boards. The improvements were the result of employing a wet-strengthening treatment, the use of a greater number of individual plies having higher dry strength than those used in the commercial boards, and the consequent increase in the amount of water-resistant adhesive used in laminating the solid paperboard.

The weatherproof solid paper container manufactured today for use in overseas shipment, the so-called "Victory Container," is deservedly regarded as being far superior to pre-war containers in serviceability and in resistance to failure when wet. Further improvements in the strength and rigidity of paper containers are, nevertheless, highly desirable to afford greater protection to the contents. An investigation of some of the factors influencing the strength and rigidity of solid paperboard to be used in such containers, now in progress at the Forest Products Laboratory, is particularly concerned with the properties of the board in the water-soaked condition. It is the purpose of the present report to summarize the results thus far obtained.

Test Methods

The following tests were made on small specimens cut from sample panels of both commercial and laboratory boards:

The thickness and weight per 1,000 square feet of the boards were determined on air-dry specimens after conditioning to equilibrium at 50% relative humidity and 75° F.

The stiffness or rigidity of flat panels, expressed as the modulus of elasticity in bending was determined by the Tinius Olsen stiffness tester, using a specimen 2 inches wide on a 2-inch span.

The resistance of the scored or creased portion to failure in combined tension and bending, expressed as a "score strength number," was determined by the Carlson score tester.[2] The boards were scored or creased with a 3/16- by ½-inch bar scorer. Test strips 1 inch wide were cut with the score perpendicular to the length of the specimen.

The tensile strength of a board was determined perpendicular to the score on a strip 0.6 inch wide.

Water absorption was determined on a 6- by 10-inch board after immersion in water for 24 hours (U. S. Army Specification No. 100-14A).[3] The water absorption value was based on the air-dry weight of the board conditioned as previously described. Water absorption approaching that at equilibrium was determined after 48-hour immersion of specimens 2 inches wide and 4 inches long, based on the air-dry weight of the specimen conditioned as described.

The bursting strength of the boards was determined according to U. S. Army Specification No. 100-14A.

The bending modulus, score-strength number, and tensile-strength determinations were made on air-dry specimens conditioned as described and on specimens after immersion in water for 48 hours. This immersion time was adopted to avoid incompletely soaked specimens in evaluating the influence of the wet-strengthening resin used in the experimental boards. Water absorption rate determinations show the 48-hour period to be practically equivalent to equilibrium conditions. The test values reported are the averages of determinations in and across the machine direction of the boards.

Tests on Commercial Boards

Table I shows minimum requirements for solid paperboard according to Army Specification No. 100-14A.

TABLE I.—MINIMUM REQUIREMENTS FOR SOLID PAPERBOARD

Grade	Symbol	Minimum Caliper	Minimum Average Bursting Strength	
			Dry	After 24-hour Immersion
		In.	Lb./sq. in.	Lb./sq. in.
1	V1s	0.100	750	500
3	V3s	0.090	400	150

A commercial 100-point, nonweatherproof, solid paperboard was tested for comparison with commercial weatherproof boards. The nonweatherproof board had fairly high values for bending modulus, score-strength number, tensile strength, and bursting strength when the board was dry, but it became weak after immersion in water (No. 1, Table II). The soaked board was completely delaminated and absorbed water in the standard 24-hour test to the extent of 180% of its air-dry weight and to the extent of 190% on the same basis when samples 2 by 4 inches in size were immersed for 48 hours. The soaked board had no measurable rigidity and had a Carlson score-strength number of 16% and a tensile strength of only 5% of the respective original values. The bursting strength of the soaked board after the

* This is one of a series of progress reports prepared by the Forest Products Laboratory to further the Nation's war effort. Results here reported are preliminary and may be revised as additional data become available.

[1] Member TAPPI; U. S. Forest Products Laboratory, Madison, Wis.

[2] U. S. Pat. 1,612,415, Fiberboard score test.

[3] Since this paper was prepared, this Army specification has been superseded by Joint Army-Navy Specification, (JAN-P-108).

standard 24-hour immersion was only 9% of the original value.

Four samples of V3s type weatherproof board had strength qualities in the dry condition only slightly superior to those for the nonweatherproof board. Their average values are given as No. 4, Table II. After immersion in water, however, the weatherproofed boards lost less of their dry qualities than the nonweatherproofed. They showed no delamination, retained 30% of their original rigidity, had score strength numbers 36% of the air-dry values, and held 15% of their tensile strength while absorbing water to a value of 70% after 48-hour immersion. The bursting strength after 24-hour immersion was 65% of the air-dry value, while the standard water absorption test gave a value of 47%.

Eight samples of V1s type weatherproof board, whose average properties are listed as No. 5, Table II, had fairly similar strength qualities among themselves in the air-dry condition. Although their rigidity was the same as that of the V3s boards and the nonweatherproof board described previously, they had roughly a 90% higher score-strength number, a 25% higher tensile strength, and an 80% higher bursting strength. The V1s test specimens on immersion in water for 48 hours showed no delamination, but absorbed water to the extent of 78% and were only approximately 25% as rigid, had 38% the score-strength number, and were 15 to 20% as strong in tension as the air-dry boards. After a 24-hour water immersion the V1s boards retained 85% of their air-dry bursting strength and absorbed 28% water in the standard test. In the wet condition the average values for the V1s boards exceeded those for the V3s boards in strength number by more than 90% and in bursting strength, by 130%, but was weaker in rigidity.

The best values for score strength, rigidity, tensile strength, and water absorption among the properties of the eight V1s boards are listed as No. 6, Table II. The term best means maximum for strength properties and minimum for water absorption in the commercial boards tested thus far at the Laboratory. No one board, of course, possessed all the best qualities.

Several of the commercial boards had asphalt incorporated in their structure. Under conditions such that the amount of water absorbed was influenced more by the surface of the boards than by the edges (large panels, or small test specimens with paraffined edges) this construction showed a lower water absorption and less loss in stiffness after 24-hour immersion than the boards not so made. After continued exposure to water, however, the asphalt-containing boards also showed high water absorption and low stiffness values.

Several of the boards tested after one cycle of water immersion and reconditioning at 50% relative humidity showed essentially the same strength qualities as the original dry board. One board tended to delaminate on drying after immersion, possibly because the laminating adhesive contained too low a percentage of urea-formaldehyde resin.

Several weatherproof containers, made from V1s boards and immersed in salt water for 24 hours, suffered, in drum tests, a general loss of 60 to 80% in resistance to rough handling. This loss is of the same order as that shown by these boards when tested for resistance to score failure after a 48-hour immersion. Since the drum tests on the containers submitted by various manufacturers were not conducted under comparable conditions, an evaluation of this quality of the different containers is not available.

Experimental Weatherproof Solid Paperboard

With the objective of making a weatherproof solid fiberboard of improved rigidity and score strength when wet, fourdrinier and cylinder (wet machine) boards for laminating were made from wet-strengthened furnishes of commercial jack pine and Southern yellow pine kraft pulps and from loblolly pine kraft pulp prepared at the Forest Products Laboratory. Melamine resin was used as the wet-strengthening agent. For most of the laminating a urea-formaldehyde-starch adhesive was used. Urea-formaldehyde resin in a condition suitable for beater addition is also being tried in current work on wet-strengthened fiberboard.

Best Experimental Boards

The experimental weatherproof boards of approximately 100-point caliper that showed the greatest improvement in wet strength properties as compared with the commercial product were made with twelve or thirteen plies. About the same degree of improvement was obtained from either commercial jack pine or commercial Southern yellow pine kraft pulp. These pulps were beaten to Schopper-Riegler freeness values ranging from 750 to 815 ml. and treated with 4% by weight of melamine resin, 3% rosin size, 1% wax size, and alum to pH 5 added to the stuff in the beater. The stock going on the machine was not jordaned and the pH of the tray water was controlled with sulphuric acid.

Certain strength properties of the single ply 8- to 9-point boards and 4-point paper made as described and the 100-point solid paperboards laminated from them are given in Table II and identified as boards 17, 20, and 27. The tensile strength of the plies in the dry condition before lamination was relatively high, ranging between 6,900 and 8,900 p.s.i. and comparable to some commercial boards made from Southern pine kraft as illustrated by boards 7 to 16 inclusive in Table II.

The wet tensile strength of the experimental 8- to 9-point boards and 4-point paper ranged from 2568 to 3352 p.s.i. A commercial weatherproof 9-point board was not available for comparison with the experimental 9-point board, but an 8-point nonweatherproof board (without wet-strength treatment), had a wet tensile strength of 1,000 p.s.i. (board 7, Table II). The experimental boards were considerably higher in wet tensile strength than a commercial 25-point jute filler claimed to have weatherproof qualities (board 3). This jute filler was but little higher in wet tensile strength than another 25-point commercial board (No. 2) not purported to be weatherproofed.

Experimental jack pine board. — As previously mentioned, the best values found among the commercial 100-point V-boards are shown as item 6 in Table II. No one of these boards had all of these best values. A comparison of the wet-strength and water-resistant properties of the 100-point board laminated from the experimental jack pine 9-point board (No. 17, Table II) with corresponding best values of several commercial boards (No. 6) shows that the experimental board was almost four times as strong in tension across the score, twice as rigid, and three times as strong in score strength and, at equilibrium, absorbed 25% less water. The experimental board, like the commercial board with which it was compared

in regard to water resistance, had asphalt as the laminating adhesive for the top and bottom faces.

Experimental Southern yellow pine board.—Experimental 100-point board 27, laminated from thirteen plies of Southern yellow pine kraft 7-point board was somewhat better than board 17 in rigidity, both wet and dry, and also in dry score strength. The dry and wet score strengths of board 27 were essentially the same. The amounts of size in each of these two boards was the same. Likewise there was no difference in the quantity of melamine resin.

Factors Influencing Properties of Experimental Boards

Asphalt for Reducing Water Absorption. — The influence of asphalt in reducing water absorption, when used as the laminating adhesive for the top and bottom faces, is shown by experimental 100-point boards 17 and 20. Board 20 was made with one less 8-point ply than board 17 and the top and bottom faces were of approximately 4-point paper. The water absorption of board 20 at equilibrium was thereby reduced 35% from that of board 17. The wet strength properties of this board, compared with board 17 were: 33% higher tensile across the score, 19% lower rigidity, and 12% higher score strength.

Influence of Tensile Strength of Wet Plies.—The wet score strength of laminated boards tends to increase with increase in the wet tensile strength of the individual plies, as is illustrated by boards 25, 19, 18, 23, 22, 28, 27, and 17 listed in ascending order of wet tensile strength of the plies.

Influence of Absorbed Water.—In the data on the experimental boards, a trend is indicated that wet rigidity is dependent on the amount of water absorbed. Wet score strength, however, does not appear to be so related.

Influence of Resin in Laminating Adhesive.—An indication of the influence of the amount of resin in the urea-formaldehyde-starch laminating adhesive is shown by the results for 2 six-ply 100-point boards, Nos. 21 and 22, made from loblolly pine sulphate pulp prepared at the Forest Products Laboratory. The amount of resin based on the weight of starch used for laminating boards 21 and 22 was 5 and 25%, respectively. After immersion, the water absorption of the two laminated boards was the same but the rigidity of board 22 was 80% higher and its score strength was 35% higher than board 21. It is thus indicated that, (1) when the resin content is sufficient to prevent delamination upon soaking, the water absorption of the board is independent of the resin content throughout and somewhat beyond the range now being used commercially, (2) the wet rigidity and score strengths are influenced by the resin content of the adhesive.

Influence of Rosin Size and Melamine.—The influence of size alone and of size plus melamine resin on the wet tensile strength is indicated by the results for the 7- to 10-point boards 24 to 27 inclusive. The addition of 3% rosin and 1% wax size increased the wet tensile strength from the 133 p.s.i. of the water-

TABLE II.—COMPOSITION AND PROPERTIES OF WEATHERPROOF 100-POINT CALIPER SOLID PAPERBOARD AND THE COMPONENT PLIES

Description of Board	Individual Ply								Average Tensile Strength	
	Machine Run No.	Rosin, % on pulp	Wax, % on pulp	Melamine, % on pulp	Thickness, mils.	Weight, lb./1,000 sq. ft.	Density, g. per cc.	Size No.	Dry, lb. per sq. in.	Wet, lb. per sq. in.
COMMERCIAL										
Nonweatherproof										
1. 100-point caliper	....	..	..	..	...	...	...	..	....	....
2. 25-point caliper, Southern yellow pine kraft	....	0.7	0	0	25.0	86	...	0.9	7,335	782
Weatherproof										
3. 25-point caliper, jute filler	....	3.5	0	0	25.0	103	0.82	..	4,473	852
4. 100-point caliper, V3S. Average of 4 boards	....	..	..	..	...	...	...	..	....	....
5. 100-point caliper, V1S. Average of 8 boards	....	..	..	..	...	...	...	..	....	....
6. 100-point caliper. Best [4] values of 13 boards, V1S, V2S, and V3S	....	..	..	..	...	...	...	..	....	....
EXPERIMENTAL										
Nonweatherproof										
7. Commercially made Southern yellow pine kraft cylinder board	....	0.7	0	0	8.1	37	.87	4.3	7,875	1,005
8. Commercially made Southern yellow pine kraft cylinder board	....	0.7	0	0	9.3	40	.83	2.9	8,540	915
9. Commercially made Southern yellow pine kraft cylinder board	....	0.7	0	0	11.6	48	.79	1.9	9,375	976
10. Commercially made Southern yellow pine kraft cylinder board	....	0.7	0	0	13.2	55	.80	1.9	8,790	1,113
11. Commercially made Southern yellow pine kraft cylinder board	....	0.7	0	0	14.5	57	.76	1.6	7,615	851
12. Commercially made Southern yellow pine kraft cylinder board	....	0.7	0	0	19.6	73	.72	1.3	7,435	788
13. Commercially made Southern yellow pine kraft cylinder board	....	0.7	0	0	25.2	86	.65	0.9	7,335	782
14. Commercially made Southern yellow pine kraft cylinder board	....	0.7	0	0	29.8	116	.75	1.3	6,995	753
15. Commercially made Southern yellow pine kraft cylinder board	....	0.3	0	0	22.5	88	.70	0.9	7,195	888
16. Commercially made Southern yellow pine kraft cylinder board	....	0.3	0	0	17.4	52	.58	0.8	6,534	581
Weatherproof										
17. Experimental fourdrinier board: commercial jack pine kraft pulp	2,091	3.0	1	4	8.0	33	.72	4.4	8,895	3,352
18. Experimental fourdrinier board: commercial jack pine kraft pulp	2,093	3.0	1	4	15.0	64	.81	3.8	4,788	1,720
19. Experimental fourdrinier board: commercial jack pine kraft pulp [5]	2,092	3.0	1	4	18.0	63	.68	2.5	4,330	1,372
20. Experimental fourdrinier board: commercial jack pine kraft pulp [6]	2,091	3.0	1	4	8.9	33	.72	4.4	8,895	3,352
Experimental fourdrinier paper: commercial Southern yellow pine kraft	2,173	3.0	1	4	3.7	15	.70	4.5	6,754	2,733
21. Experimental fourdrinier board: experimental loblolly pine kraft pulp	1,997	2.0	2	2	13.0	50	.74	1.4	5,448	2,387
22. Experimental fourdrinier board: experimental loblolly pine kraft pulp	1,997	2.0	2	2	13.0	50	.74	1.4	5,448	2,387
23. Experimental fourdrinier board: commercial Southern yellow pine kraft pulp	2,113	3.0	1	4	6.7	32	.71	3.9	5,080	1,727
24. Experimental fourdrinier board: commercial Southern yellow pine kraft pulp	2,225	0.0	0	0	8.0	...	.69	0.1	7,365	133
25. Experimental fourdrinier board: commercial Southern yellow pine kraft pulp	2,223	3.0	1	0	8.0	36	.83	5.4	6,120	875
26. Experimental fourdrinier board: commercial Southern yellow pine kraft pulp	2,174	3.0	1	4	10.0	38	.75	7.2	5,845	2,220
27. Experimental fourdrinier board: commercial Southern yellow pine kraft pulp	2,174	3.0	1	4	7.0	32	.75	6.5	6,910	2,568
28. Experimental fourdrinier board: commercial Southern yellow pine kraft pulp	2,231	2.0	0	4	8.8	39	.80	3.4	7,870	2,500
29. Experimental wet machine board: commercial Southern yellow pine kraft pulp	....	3.0	1	4	23.0	122	.84	2.5+	7,763	3,270
30. Experimental wet machine board: commercial Southern yellow pine kraft pulp	....	3.0	1	4	28.0	140	.86	2.5+	8,860	3,265
	....	3.0	1	4	34.0	161	.85	2.5+	7,900	3,380

[1] 48-hour immersion of test specimen. [2] 24-hour immersion of 6- by 10-inch panel. [3] 2- by 4-inch specimen. [4] Except the value for weight

leaf board No. 24 to 875 p.s.i. for board 25. The value for board 25 is essentially the same as that of board 2, the commercial jute filler in which 3.5% rosin but no wax size was used. When 4% melamine resin was used in conjunction with the rosin and wax size, as in boards 26 and 27, the wet tensile strength was increased to an average value of 2,400 p.s.i. After soaking 48 hours in tap water at approximately 75° F. the per cent retention of dry tensile strength with the use of 2 to 4% melamine resin, in conjunction with hard sizing, has ranged from 32 to 44%. However, a comparison of the wet tensile strength of the individual plies of boards 22 and 27 with the properties of the corresponding 100-point boards indicates that perhaps as little as 2% of wet-strengthening resin may be satisfactory and possibly less if asphalt is used as the laminating adhesive for the top and bottom faces.

Effect of Ply Thickness

Fourdrinier Boards.—Most of the boards, ranging in thickness from 8 to 18 points, were made on the Laboratory fourdrinier machine. As the thickness of the fourdrinier boards made from a given furnish was increased above 9 points, the strength of the boards decreased progressively and seriously. Two thicker jack pine kraft boards, of 15- and 18-point caliper, boards 18 and 19 respectively, made from the supply of furnish used for the 9-point board No. 17, were much lower in dry tensile strength and in size number than board 17. These decreases are attributed to a markedly poorer formation which is unavoidable when making a heavy board on a fourdrinier machine. Apparently as a consequence of poor formation, the properties of the 100-point boards laminated from these boards were lowered considerably although when wet the tensile and score strengths were still higher than the corresponding maximum values of the commercial boards.

The decrease in the strength of the experimental fourdrinier boards with increasing thickness made it impossible to determine the effect of ply thickness with the high wet-strength material. A series of commercial boards, however, ranging in thickness from 8 to 30 points and of high dry-strength but neither hard-sized nor treated for wet strength were laminated into solid paperboards to determine whether some indications of the influence of ply thickness would be apparent despite the nonweatherproof character of the boards. The results for this series, boards 7 to 16 inclusive, show a trend toward lower water absorption and higher tensile strength across the score when wet, for 7 or more plies. The maximum number of plies used was 12. The highest rigidity when wet resulted with the greatest number of plies but no trend in wet score strength was apparent. These trends probably result from the greater amount of water-resistant laminating adhesive present in the boards with the greater number of plies.

Wet-machine Boards.—In order to obtain thicker plies having a better formation than obtainable on the fourdrinier machine, a trial was made with the Laboratory wet machine. In this instance the single wet

Laminating Adhesive, Amount of Urea Formaldehyde Based on Starch %	100-point Board: No. of Plies	Thickness, mils	Weight, lb./1,000 sq. ft.	Bending Modulus: Dry, 1,000 lb. per sq. in.	Bending Modulus: Wet,[1] 1,000 lb. per sq. in.	Score Strength: Dry, Carlson number	Score Strength: Wet,[1] Carlson number	Average Tensile Strength of Scored Strip: Dry, lb. per sq. in.	Average Tensile Strength of Scored Strip: Wet,[1] lb. per sq. in.	Water Absorption: 24 Hours,[2] %	Water Absorption: 48 Hours,[2] %	Bursting Strength: Dry, lb. per sq. in.	Bursting Strength: Wet,[3] lb. per sq. in.	Test No.
..	..	....	351	235.0	0.0	37	6	2,322	116	181	189	450	40	..
..	..	....	....	....	....	....	....	....	....	....	....	....	....	..
..	..	....	....	....	....	....	....	....	....	....	....	....	....	..
..	..	103	333	210.0	63.0	39	14	2,396	368	47	70	460	297	..
..	..	110	424	233.0	59.0	72	27	3,204	506	28	78	810	690	..
..	..	128	500	290.0	72.0	102	40	4,308	856	12[5]	57[5]	925	860	..
20	12	105	529	460.5	137.0	130	52	7,900	1,323	...	44	....	....	33
20	10	100	470	420.0	113.0	115	53	6,908	1,741	...	44	....	....	34
20	9	108	501	396.0	99.0	135	53	8,508	1,324	...	51	....	....	35
20	7	93	...	482.5	99.0	140	34	7,490	1,375	...	55	....	....	36
20	7	98	...	418.5	109.5	134	32	7,050	1,293	...	61	....	....	37
20	5	95	398	449.0	86.0	130	50	5,888	825	...	73	....	....	38
20	4	99	385	388.0	86.0	114	24	6,410	738	...	70	....	....	39
20	3	90	371	388.0	109.0	123	27	5,295	682	...	61	....	....	40
20	4	90	351	472.0	120.0	126	35	5,860	983	...	65	....	....	41
20	6	95	370	425.5	92.0	135	50	6,623	894	...	72	....	....	42
20	12	94	478	505.0	141.5	99	131	9,290	3,225	31	43	1,000+	1,000+	14
20	7	105	511	386.0	108.0	70	79	3,961	1,878	...	78	1,000+	950+	16
20	6	105	431	310.0	72.5	70	58	3,705	1,130	...	65	856	950+	15
20} (7)}	11} 2}	98	523	426.5	114.5	133	147	8,710	4,290	10	28	1,000+	....	54
25	6	98	430	264.0	71.5	106	59	....	1,402	32	54	850	950+	6
26	6	95	449	261.0	129.0	...	80	....	....	...	53	....	....	5
20	10	95	509	518.0	109.0	65	75	5,240	2,182	41	46	1,000+	950+	17
..	..	....	....	....	....	....	....	....	....	....	....	....	....	..
20	12	93	504	373.0	79.0	118	69	7,520	2,330	32	42	1,000+	950+	28
..	..	....	....	....	....	....	....	....	....	....	....	....	....	..
20	13	95	494	564.0	154.5	127	125	8,280	3,000+	18	42	1,000+	950+	27
20	11	101	547	454.0	121.0	122	112	8,765	3,000+	33	51	1,000+	950+	29
20	4	93	405	280.0	107.0	139	102	5,705	1,959	45	65	1,000+	950+	31
20}[8] 20}	2}[8] 1}	90	424	362.0	....	...	67	7,380	2,700	43	55	1,000+	950+	32

because it is a maximum [4] Minimum values. [6] From same chest furnish used for machine run 2093. [7] Faces laminated with asphalt.

web was allowed to wind around the press roll until the desired thickness was attained and then cut off with a doctor.

The individual plies of boards 29 and 30 were heavy wet-machine boards of high dry- and wet-tensile strength made in this way. These cylinder-type boards, made from the commercial Southern yellow pine pulp, were either equal or superior in strength to the commercial cylinder boards made from the same pulp. The low dry rigidity and low wet-strength properties of the laminated boards made from them, with only 4 and 3 plies respectively, indicates that it is probably necessary to use an appreciably greater number of plies in order to attain high wet-strength properties. The rigidity values for the dry laminated boards 7 to 16 inclusive made from the series of commercial plies tend, in general, to confirm this indication.

It appears desirable to determine the effect of ply thickness on the properties of the solid fiberboard using commercially-made plies having a tensile strength approximately equal to that of boards 29 or 30.

Limitations of Present Results

Relations and influences of factors cited in this report are only tentative and may be modified or changed as more information becomes available. More information is needed, e.g., on various pulps and pulp mixtures, pulp processing, agents for increasing wet strength, means of reducing water absorption, laminating adhesives, and various combinations of plies. The Laboratory experiments should be confirmed by commercial trials and serviceability tests of fabricated containers.

On the basis of present results, a highly serviceable cylinder-machine board might be made from either commercial jack pine kraft pulp or Southern yellow pine kraft pulp processed for high dry-strength, hard-sized with rosin, and treated for wet-strength enhancement with melamine resin, urea-formaldehyde resin, or by other suitable means.

Stock Preparation*

By Dwight E. Jones[1]

Abstract

The author discusses the development, advantages, and disadvantages of beating and refining equipment which has been used by the paper industry for the preparation of stock.

The "fiberage theory" advanced by Sigurd Smith of Denmark is considered to be the most pertinent of all the theories on stock treatment. The Jones-Bertram beater was designed according to the principles as outlined by Dr. Smith and it is expected that other units in the future will incorporate his ideas. A more definite control of pressure is also indicated in the newer installations.

The subject of stock preparation is extremely broad and involves many types of machines and mechanical and chemical processes. The present discussion is limited to the examination of the mechanical action that takes place on the fibers for papermaking, their separation, crushing, teasing out, fibrillation, and possibly the formation of cellulose mucilage. Briefly this subject, as we propose to discuss it, may be covered by the broad term, "beating" or a combination of terms, "beating and refining". It is, of course, recognized that different papers require different degrees of work. Some papers require mere fiber separation; others, that they be cut very rapidly; still others that the fibers be worked to make them soft and flexible, and in the extreme, the fibers be given prolonged work so that they are not only separated and become flexible, but will be well fibrillated. It is also recognized that the selection of equipment to produce these results must be made suitable for a given set of requirements, but in all cases it must provide sufficient freedom for reasonable changes.

Stock Preparation Equipment

When discussing stock preparation equipment with a view of determining what to expect for the future, it is advisable first to explore the equipment of the past, and the present, to see what may be its merits and defects. The E. D. Jones & Sons Company during its history has made practically all the types of stock preparation equipment and have used these machines in various combinations, and it is from this experience and published facts that the author wishes to draw in making comparisons of various pieces of stock preparation machinery.

Hollander Beater

Let us examine first the Hollander beater—that machine which was invented by the ingenious Dutch about 1750 to replace the crude inefficient stamping mill. There must have been something pretty good about this machine otherwise it would not have been retained for nearly two hundred years. To be sure, the machine has gone through considerable evolution, made possible principally by the development of materials. Just for example, at one time the size of a roll in a Hollander was limited to the largest tree butt that could be found. The use of a piece of log for a roll has been discarded within the last one hundred years. It is presumed that there is no piece of equipment that has been used for stock preparation equipment that has had as much thought, that has had as much condemnation, as the plain old-fashioned Hollander beater. Yet in its history, it has been used for all kinds of purposes, first, of course, in the preparation of the almost universally used rag fiber, later as a pulper, for the breaking up of sheets and laps of various kinds of wood pulp, and then continuing in its function as a beater. In fact, the possibility of adapting it to all kinds of situations is today one of its chief advantages. The disadvantages are recognized as being low in over-all efficiency and limited strictly to batch operation.

Jordans and Refiners

Next, let us examine jordans and refiners. The

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term is used synonymously. As far as can be learned, the disk refiner was the first machine, brought out by Kingsland in 1856 and the conical refiner as made by Jordan and Eustice followed in 1858. These gentlemen recognized some of the limitations of the Hollander at the time and believed that they had hit upon an idea that would dispense with its use and make possible the preparation of paper fibers on a continuous basis. All were, it is told, disappointed when they found that instead of replacing the beater, it simply supplemented it. However, their contributions to papermaking must be fully recognized. They did help considerably to shorten the time of stock preparation and to make it possible in this shorter time to have the stock in better condition that went to the machine. These men, it is believed certain, recognized the similarity of their machine to a beater and that was why they were so confident that it would meet with success. In one case they had a rotating disk with bars, in the other case they had a conical plug with bars, both of which would accelerate the stock and carry it across the bed plate which in their case was a stationary disk or the shell filling of a jordan. Let us compare these two basic machines, i.e. the conical and the disk refiner.

The disk refiner because of its parallel adjustment of the disks theoretically meant that the bars in both rotating and stationary element would wear uniformally and parallel and at all times present the ideal type of bar relationship. However, this must have been better theory than practice because invariably the disk refiner ended up in failure, possibly because of the difficulty of maintaining parallelism of the disks, or the problem of retention of fibers in the working areas. In the disk refiner the minute a particle of fiber is accelerated, the power of centrifugal action takes hold and tends to move these fibers in a hurry out of the area and unless extraordinary means are taken much of the bar surfaces may be left unprotected. Another difficulty encountered in the development of the disk refiner, was to generate sufficient endwise pressure so that the fibers could be treated properly. Some of these disadvantages of the disk refiner were not encountered in the conical machine because it was comparatively easy to get reasonable mating of the stator and the rotor, and once attained the contact remained with a reasonable degree of accuracy. Also, the effect of centrifugal force or pumping action is very much lower so that fibers are retained to protect the working edges, and it is comparatively easy to set up sufficient pressure to do the necessary work because 1 pound of force applied on the end of the plug resolves itself into a force of many pounds perpendicular to the bar edges. However, the conical machine has one serious defect which is very seldom overcome even today, and that is the change in relationship between the stationary and the rotating bars with wear. Because of the unbalance of metal in the various sections, there is a tendency to gradually wear the conical surface wavy. When this occurs, there are areas of excessive high pressure while others have excessive low pressure, and it is impossible to get the best work out of such a machine.

Since the invention of these refiners, these machines have been combined, the theory being that one machine would have all of the advantages that both had individually and they would overcome each other's defects. The result, however, as is known, was a maintenance man's nightmare.

Advantages and Disadvantages of Beating and Refining Equipment

Now, to examine briefly the advantages and disadvantages of a refiner as compared to a beater. First of all the refiner is a continuous machine and in certain respects this is a very definite advantage although not always, as in many places it is desired to have batching for the purpose of thorough and active blending. In general the refiner may be more effective for final lowering of freeness and hydration of stock, particularly in the utilization of floor space if not in the use of power. There is a definite reason for this. Almost always the knives or bars are placed much closer together so that more power can be used per inch of length and far more rapid action would be expected to take place. Some of this same benefit can be accomplished in a beater by putting in more bars in the roll and adding greater bed plate width. For certain kinds of stocks to get best results this necessitates transferring stock from one beater to another, a practice that is not looked upon with favor in this country but used extensively in Europe. To summarize then the advantages of a refiner is the continuous feature and the greater amount of work it can turn out for a given floor space. Let us explore some of the disadvantages in comparison.

In the case of the refiner, regardless of whether they are conical or disk, the refining action is not uniform over the bar length because of the change of speed. In the case of a beater roll the bars are moving exactly the same peripheral speed for their entire length and from each inch of length the same kind of work can be expected. Also, in the case of the refiner, it must do all of its work once through and the only control that a papermaker has at his command is to adjust the plug, or more scientifically to change the operating bar pressures. As a general rule he does not even have the possibility of changing the quantity because he must deliver what is required for the machine. He is at a disadvantage to produce always the kind of qualities that he may require, whereas, handling the stock in a beater he has at his command the possibility of changing the bar pressures from beginning to end of the cycle so that he may treat his stock more or less drastically as he learns what will produce for him the best results. The stock passes through the refining elements several times; in a good beater at the average of once every 3 to 5 minutes. An hour or two in the beater may be equivalent to many continuous machines set in line. Also in the beater the fiber has an opportunity to soak briefly in water after it once passes through the refining area before it is again subjected to this same treatment.

Some Theories for Fiber Development

Now, that some of the basic machines used to prepare fibers have been examined, let us present some of the theories that have been advanced for fiber development. Frankly, the only one that satisfies the author is the "fibrage theory" presented by Dr. Sigurd Smith—the Danish engineer. To those who have not read Dr. Smith's book recently, it is suggested that it might be worth reviewing. This stands as the ablest piece of work that has been presented on the subject of beating and the author knows of no one who has exploded the careful mathematical approach of Dr. Smith. It is realized that it would help to make his book more popular if it were written without the many mathematical formulas. However,

to get to this theory, he observed that when a square rod passed through stock at certain uniform rates with one of the edges forward, that fibers strattled this edge and were retained on the bar. His experiments lead him to certain definite conclusions.

1. That the weight of fibers that strattled this edge depended upon the consistency of the stock and were greater with a higher density.
2. That a certain minimum speed was required to accomplish satisfactory deposit of fibrages and he determined that 1500 to 1900 feet per minute were about the minimum at which he could accomplish results satisfactorily.
3. From other observations which he made, he concludes that the fibrages are formed along the leading edge of the bars in a beater or jordan, or in fact, any piece of refining equipment that is successful, and being so held, work is done on them when carried across and in close relationship to the stationary bars. Not alone are fibrages formed on the leading edge of the rotating element, but on the leading edges of the stationary bars, this is caused by the high velocity of excess of stock, propelled by the rotor, that is trying to escape.
4. That this fundamental characteristic of fibrage formation has also a selective action, i.e., the longer fibers are more readily caught and retained while the short fibers slip off. Hence in a beater, short fibers are less likely to treatment than long fibers.

This may sound elementary, but the author is trying to drive home the fact that it is essential to have bar edges if we are going to have work in any refining machine, and whereas the bar edges in themselves may not do all the work, it is necessary that they be there if work is to be accomplished.

There have been other theories advanced of fiber development. One has been the hydraulic theory or shooting the stock against a target with high velocity or rotating a mechanical device in the stock at high velocity. A number of these machines have been developed and tried and to the author's knowledge all that they ever succeeded in doing was to give the fibers a degree of flexibility and separating them, and this was always done at a very high cost in power. This same action can actually be obtained in a beater by raising the roll off the plate or in a refiner by moving the rotor away from the stator. All know what has happened. There is not the time to wait around for fiber to be developed on this basis.

Then there is still another theory—that of squeezing fibers in a constricted mechanical passage. This might be so-called "wedging action." To the author's knowledge there has been no machine built that actually has proved successful for fiber development that bases its final results on this type of action. This type of action may be used successfully for fiber separation, or for possible reduction of coarse objects such as screenings, but not for fiber development.

Now, that some of the theories on which stock preparation equipment operates and the machines that have been used in the past and are currently in operation have been considered, equipment in the future may be discussed.

Future Developments

First, it is certain that all will agree that stock preparation in the sense that it has been discussed, is a mechanical problem and is naturally subject to the improvement in the use of new materials and the knowledge of their application. Based upon the knowledge that bar edges on which to form fibrages are necessary, first all of the equipment must be arranged to have as many bar edges as possible as long as these bar edges are effective. The Jones-Bertrams beater has been based upon this principle. In this machine far more bar edges have been used than in a conventional Hollander with the result that for the same, or even less circulating power, far more effective work is accomplished. The author does, however, not advocate any piece of refining equipment where all the attention is directed towards the maximum number of cutting edges that can be arranged. The matter of arranging cutting edges must be done with the area in mind which also is an extremely important factor, e.g., there may be many edges of contact but all of them made extremely thin —a good machine for making blotting paper but useless for anything else. On the other hand, the bar edges may be broad so that it would be quite impossible to cut any of the fibers, and the papermaker is limited as to the kind of stock that he can produce in such a machine.

Until comparative recent times, the papermaker arranged with the manufacturer the selection of tackle so that he could accomplish a given set of results, i.e., if it was desired to do only hydrating, wide bars were selected, or if the primary object was to cut, then thin bars were used. Actually what was being accomplished was a crude control of the maximum contact pressure between rotating and stationary elements without realizing that the pressure is important in fixing what can be accomplished in a given machine. With stock at a fixed density in a machine with wide bars, the fibers may be only bruised; but with duplicate conditions and thin bars all the fibers may be cut. The working pressures fix the separation of working elements, and hence, the type of work that takes place.

When pressure is mentioned, net effective pressure for the actual net instantaneous area of contact is meant. This is quite different than the projected area of the plate on the roll, or the shell and on the plug, which is frequently a way of figuring for pressure. The instantaneous area of contact has been generally ignored, very likely because it has been difficult to determine. It has been found that by controlling the pressure on this effective area, that very widely different results can be accomplished with the same filling, e.g., with a sharp filling, by controlling the pressure so that it is very light, a remarkable job of fiber separation can be accomplished without in any way cutting the fibers. By determining pressures, it is possible to know immeditely whether a given set of filling for a machine will prove effective for producing the best results. It is found, also, that different types of fibers will stand pressures of different amounts and to make a given kind of paper, certain pressures must be possible if these results are to be accomplished with economy. This naturally leads to the application of controls.

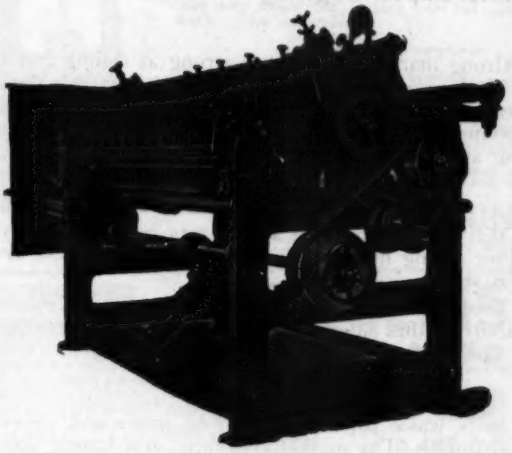
Application of Controls

Thanks to the instrument makers, there are means of measuring pressure or horsepower input. Although it is rather difficult to translate horsepower into net effective pressure, it is still a means to assist in controlling the equipment. Future developments promise to make it possible to know the instantaneous contact pressure right at the place where the pressure is being generated. The wide application of controls and measuring devices is going to be one of the chief means of helping to take away some of the mystery that has existed in stock preparation.

In stock preparation extremely small particles are treated and to bring these small particles in correct relationship so that they will be subject to treatment along the entire length of the bar edges and to uniform pressure along the faces of the bars, requires the extreme in the way of precision. Precision combined with correct design to produce fibrages along the entire bar lengths plus control, will give the elements in the equipment essential to develop fiber for paper on a sound and economic basis.

MODEL 28

ROLLER BEARING CUTTER



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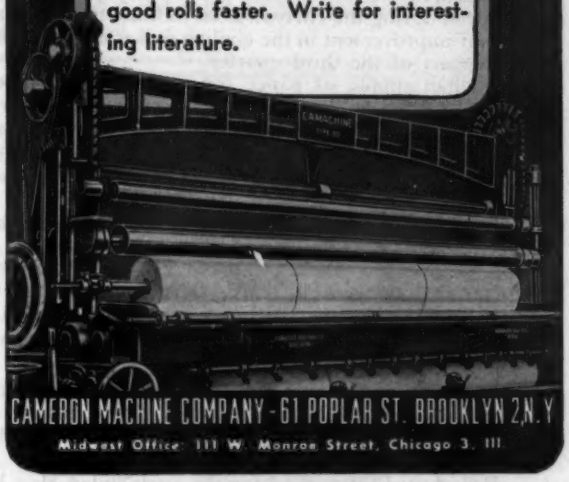

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New York Paper and Pulp Market Review

Paper and Pulp Supply Situation Continues Tight—Restrictions On Use of Pulp and On Deliveries of Shipping Sack Papers Cited In Amended Order L-279 — More Waste Paper Urgently Needed.

Office of the PAPER TRADE JOURNAL,
Wednesday, May 30, 1945.

Paper supply in all major types continues tight in the wholesale market. Increasing optimism is, however, reflected in the comment on the supply situation in the future. Most reports from manufacturers' representatives, jobbers, and general paper merchants received during the current week indicate the expectation of improvement in the civilian paper supply in the latter part of the third quarter.

Civilian supply of paper for packaging continues to be reported as very tight. The commercial use of shipping sacks for packaging apples, dessert preparations and pet food has been restricted to the quantity used in 1944. This was affected by Amendment of Limitation Order L-279.

The index of general business activity for the week ended May 19 increased to 144.3, from 141.4 for the previous week, compared with 144.8 for the corresponding week in 1944. The index of paperboard production was 163.7, compared with 160.4 for the previous week, and with 162.5 for the corresponding week in 1944.

Paper production for the week ended May 19 was estimated at 92.5%, compared with 90.7% for 1944, with 92.2% for 1943, with 93.9% for 1942, and with 100.2% for the corresponding week in 1941.

Paperboard production for the week ended May 19 was 93.0%, compared with 97.0% for 1944, with 96.0% for 1943, with 81.0% for 1942, and with 85.0% for the corresponding week in 1941.

Outlook for increased quotas of newsprint paper for newspaper publishers is not very favorable, the WPB reports. Canada will ship 215,000 tons of newsprint monthly, beginning July 1, through the third quarter, instead of 200,000 tons monthly. This additional supply is offset by the present excess of 50,000 tons of deferred orders which have accumulated since January 1, 1945. The present rate of newsprint orders from the Army, Foreign Economic Administration and other government agencies, is running at the rate of 20,000 tons or more monthly, which is higher than in 1943 and 1944.

Pulpwood

Pulpwood receipts totaled 1,159,600 cords in April, which is approximately 3% below April, 1944. The WPB also announced receipts for the first four months of 1945 aggregated 331,900 cords, which is 5% below 1944.

Wood Pulp

Certain restrictions on the use of wood pulp are explained in Part 3281, Pulp and Paper, to Limitation Order L-279, as amended May 25, 1945. All pulp allocated on Form WPB-2973, Sub-Schedule D-2 Items #054100 and #054900, must be used only for the manufacture of shipping sack papers.

Rags

Mill demand for white cotton cuttings is active. The relatively limited supply situation has created a strong market. Prices are strong at ceiling levels.

Trading in old cotton rags is active at this date. Nearly all grades are in relatively heavy demand. Roofing grades continue in heavy demand with prices firm at ceiling levels.

Old Rope and Bagging

Mill demand for good Manila rope continues heavy. Other strong fibers are in good demand. Prices are firm and unchanged.

Trading in scrap bagging reflects no increased activity at this date. Reports characterize the market as slow and quiet. Prices continue unchanged.

Old Waste Paper

More waste paper is needed by paper and paperboard mills. The market continues in a strong position. Collections are reported good. Prices are strong at ceiling levels.

Twine

Demand is active for the better grades of twine. No important change in supply or in prices has been reported this week.

Pinkerton Joins Reinhold-Gould

Fred H. Pinkerton, sales and merchandising executive, leader of advertising and marketing associations and writer on direct mail advertising subjects, has joined Reinhold-Gould, Inc., paper merchants at 535 Fifth Avenue, New York, as sales manager.

Best known in New York Graphic Arts circles as former Sales Promotion Manager of the Mechanical Goods Division of United States Rubber Company, Pinkerton has long been active in the educational activities of the Industrial Marketers of New Jersey, serving as President in 1940. Presently he is chairman in charge of Forward Planning for the New Jersey marketing group.

In announcing the new appointment, Harry E. Gould, president, called Pinkerton's background in advertising and sales promotion, "a distinct advantage to printers and lithographers who can benefit from Mr. Pinkerton's experience as both buyer and seller of their services and facilities."

Decora Acquires Coated Stock Plant

FORT EDWARD, N. Y.—The former plant of the Amalgamated Paper Co. has been leased to the Decora Paper Co., of Haledon, N. J. The structure also formerly housed a branch of the International Paper Co. The new concern plans to start moving machinery immediately from New Jersey and will manufacture coated paper.

It is understood that plant facilities will eventually be enlarged and probably about 150 persons will be employed when operations are in full swing. It is said that the local Chamber of Commerce was instrumental in securing the new concern.

RECORD PAPER & PULP STOCK VALVES "BONNETLESS SELF CLEARING" — — — "RESIDUE POCKETLESS TYPE"

METALS — I.B.B.M., all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
- The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.
- The yoke mountings are such that yokes for various methods of gate operation are interchangeable.
- Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.

"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS."

RECORD FOUNDRY & MACHINE COMPANY

LIVERMORE FALLS, MAINE, U. S. A.

SCREENS for PAPER and PULP MILLS

PERFORMANCE of your Centrifugals, Shakers and Driners definitely improved by the use of precision screens built to your specifications. Let us "sit in" on your screening problems.

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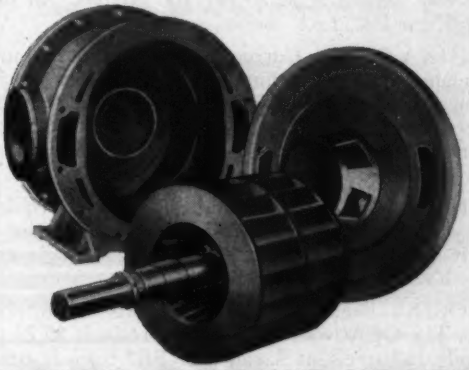

NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

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UNIFORM • SUPERIOR • DEPENDABLE

English China Clays Sales Corporation

551 Fifth Avenue, New York City

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, May 30, 1945.

BLANC FIXE—Prices on blanc fixe continue unchanged at prevailing levels. Demand is reported fair. The pulp is quoted at $40 per ton, in barrels, at works. The powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—All-over demand continues heavy. Production reported high. Allocation removed on February 27. Quotations are unchanged. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound f.o.b. shipping point.

CAUSTIC SODA—Demand very heavy. Production large, but deliveries slow. Market tight. Shipments delayed by lack of manpower. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CHINA CLAY—Current demand is reported moderate on many grades of china clay. Quotations unchanged. Domestic filler clay is quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Military and all essential requirements heavy. Car shortage hampers deliveries. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—The rosin market reports no offerings or sales. The OPA price on "G" gum rosin is $5.79 per 100 pounds, in barrels, at Savannah. "FF" rosin is established quoted at $5.75 per 100 pounds, in barrels at New York. Average price on seventy per cent gum rosin size is $5.95 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake continue to be reported unchanged. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton. All quoted prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand for soda ash is reported to absorb current production. Market is tight. Prices continue to conform to prevailing levels. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn market is reported steady. Offerings good at this date. Demand continues heavy. Prices unchanged on starch. Pearl is quoted at $3.72 per 100 pounds. Powdered starch is quoted at $3.83 per 100 pounds. All prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand good. Supply situation is favorable. Prices of the commercial grades are currently quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in bags, car lots, f.o.b. works.

SULPHUR—Current consumption of sulphur continues heavy. Market situation unchanged. The quotation on annual contracts continues at $16 per long ton, f.o.b. mines. The current price on contracts at Gulf Ports is $17.50 per long ton.

TALC—Demand reported good. Domestic grades are currently quoted at from $16 to $21 per ton at mines. Canadian at $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$61.00	@	—
Sheets	69.00	@	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, Delivered			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00
Boards, per ton—			
News	*50.00	@	—
Chip	*50.00	"	—
Sgl. Mla. Ll. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$13.[illegible]
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	12.[illegible]
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. C.	9.10	"	10.5[illegible]
C Grade E. F.	8.55	"	9.75
C Grade S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$86.00
Unbl. Softwood Sulphite	74.00
Bl. Hardwood Sulphite	83.50
Unbl. Hardwood Sulphite	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00 @ 82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	76.00
Unbl. Soda	72.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

*OPA Maximum Prices

WAR is
Our Preoccupation
(as long as it lasts)
but
Paper Mill Machinery
is Our Business

*

TABLE ROLLS PRESS ROLLS
MACHINE PARTS
FROM BEATERS TO CALENDERS

UNION MACHINE COMPANY
FITCHBURG, MASS.
(Associated with Union Screen Plate Company)

KOSMOS—DIXIE
PARIS
BLACKS

Unexcelled carbon black pigments for all types of paper and board stocks.

Outstanding for soft texture, particle fineness, and jet black color.

Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the pulp.

Takes well to the fiber and shows high retention.

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CHEMICAL

FELT WASHING COMPOUNDS

Are Your Felts Hard? Do They Lose Their Life Quickly? Use Pionite Felt Washing Compounds for *increased* felt life!

They reduce surface tension of water, prevent the precipitation of insoluble lime precipitates, disperse pitch, emulsify quickly, and rinse freely.

They *Remove*, After Continued Washing, Precipitates which have become imbedded in the fibres of the felts. We have in some instances increased Felt Life up to 25%.

Mail the attached form for a generous sample of the best suited Pionite Felt Washing Compound for your plant.

SPECIALTIES

Wash Felts—On Paper Machines ☐
In Washing Machines ☐
Hardness of water ppm or GRS. per gallon
Types of Felts Used:
Name of Company
Address
Attention of
Title

Old Rags			
White, No. 1—			
Repacked	*1.85	@	—
Miscellaneous	*1.30	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Shoeing Rags—			
No. 1	*1.55	"	—
No. 2	*1.40	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.30	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices

Foreign Rags

Pre-War Quotations

All Prices nominal

New Rags			
New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags			
No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
3rd. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.25	@	3.30
Wool Tares, light	3.25	"	3.50
Wool Tares, heavy	3.50	"	3.75
Bright Bagging	3.25	"	3.50
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

*OPA Maximum Price

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, ruled	3.00	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.36	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¼
Light Silesias	.05¼
Black Silesias, soft	.03½
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05¼
Cottons—According to grades—	
Washable shredding	.01¼
Fancy Percales	.04¼
New Black Soft	.03½
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04½
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	1.80	@	—
Miscellaneous No. 1	1.30	"	—
Miscellaneous No. 2	1.65	@	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	@	—
Repacked	2.30	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	@	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	1.75	@	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	@	3.10
No. 1 Clean bright—			
Sisal Strings			.84
No. 2 Clean bright—			
Sisal Strings			.82
Sisal Jute			.02½ @ .03½
Scrap—			
No. 1	1.25	@	1.30
No. 2	1.75	@	1.80
Wool Tares bag	4.00	@	4.25
No. 1 New Light Burlap	3.90	@	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings			
No. 1 White Ledger	2.30	"	—
No. 2 Ledger, colored	2.00	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.40	"	—
Overissue News	1.00	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.75	@	2.90
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	* —	"	4.00
Mixed Rope	—	"	1.35
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	
Soft Jute Rope	4.50	"	5.00
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3	"	3.25
South American	—	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	
Aust. Wool Pouches	—	"	3.45
New Zealand Wool Pouches	—	"	3.55
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04½
Fancy Percales	.04¼	"	.05
New White No 1.	.06¼	"	.07
New Light Flannelettes	.03½	"	.04
Canton Flannels, Bleached	.06	"	.06½
Underwear Cutters, Bleached	.06½	"	.06½
Underwear Cutters, Unbleached	.05½	"	.06
Silesias No. 1	.06	"	.06½
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached Blue Cheviots	.06½ .05½	"	.06½ .06
Fancy	.02½	"	—
Washable	.02½	"	—
Khaki Cuttings	.02½	"	.03
O. D. Khaki	.03½	"	.03½
Corduroy	.03½	"	.03½
New Canvas	.06½	"	.06½
U. V. D. Cuttings	.06½	"	.06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.80	@	—
Miscellaneous	2.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.30
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of

ENGLISH FINISH SUPERCALENDERED
MACHINE FINISHED BOOK
and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

. . . .

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

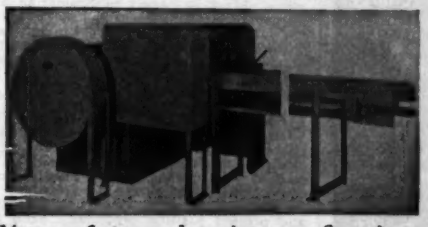
MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

WET or dry waxing machines, wax coaters and wax laminators. Sheet waxing equipment for fibre or corrugated box blanks—Aniline printers, sheeters, winders and interfolders. For quotations—

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

NO. 11 MULTIPLEX RAG CUTTER



Cuts 3½ tons of rags an hour into very fine pieces.
One of several types with capacities to satisfy all quantity requirements.

TAYLOR-STILES & COMPANY
10 BRIDGE STREET RIEGELSVILLE, N. J.

From tissue to heavy board; narrow to wide cuts; small to large diameters—there's a size and type for every job.

SAMUEL M. LANGSTON COMPANY, Camden, New Jersey

PRINTING, CONVERTING and INDUSTRIAL PAPERS
TISSUE AND BOARD
SPIRAL MILL CORES
• MILL SUPPLIES •

ESTABLISHED 1855

EASTERN REPRESENTATIVES FOR E. J. CADY PAPER AND BOARD SCALES AND MICROMETERS. AGENTS FOR AMES POCKET MEASURES

WALKER • GOULARD • PLEHN • CO.

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EXPORTS TO ALL PARTS OF THE WORLD

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HELP WANTED

GRADUATE MECHANICAL ENGINEER

with 5 to 10 years experience in the paper industry to take active and responsible part in the selection, layout and installation of new equipment for long-term expansion program. Letters of inquiry giving experience and other pertinent information, including draft and marital status are to be directed to the Employment Manager, Union Bag & Paper Corporation, Post Office Box 570, Savannah, Georgia. Persons now engaged at highest skill in essential industry cannot be considered.

UNION BAG & PAPER CORPORATION
Savannah, Georgia M-31

WANTED

ENGINEERS and DESIGNING DRAFTSMEN experienced in pulp and paper mill design and process by Consulting Engineers. Address Box 45-146 care Paper Trade Journal. T.F.

WORKING FOREMAN WANTED

Must know how to rebuild Slitters & Sheeters—also general experience on all kinds printing & special machinery.

Reputable small plant in thriving New England City—45,000 population.

Wonderful opportunity for any earnest and ambitious man desirous of becoming part of the company. Address Box 45-308 care Paper Trade Journal M-31

Unusual opportunity is open for a Salesman or Executive with $25,000 to become associated with an established and profitable Paper and Twine Jobbers located in New York City. State full experience, age, qualifications, etc. Correspondence will be held in strict confidence, Address Box 45-304 care Paper Trade Journal.

M-31

A PULP AND PAPER COMPANY LOCATED IN THE NORTHEAST COAST REGION

would like to receive applications from

STEAM PLANT SUPERINTENDENTS
STATIONARY ENGINEERS

who are available for immediate employment or interested in post-war employment.

MEN WITH EXPERIENCE IN PULP AND PAPER MILL OPERATIONS ARE PREFERRED

Address Box 45-275 care Paper Trade Journal. M-31

A PULP AND PAPER COMPANY LOCATED IN THE NORTHEAST COAST REGION

would like to receive applications from

GRADUATE CHEMISTS
GRADUATE CHEMICAL ENGINEERS
GRADUATE MECHANICAL ENGINEERS
COMBUSTION ENGINEERS

who are available for immediate employment or interested in post-war employment.

MEN WITH EXPERIENCE IN PULP AND PAPER MILL OPERATIONS ARE PREFERRED

Address Box 45-274 care Paper Trade Journal. M-31

ADJUSTOR—Experienced flat and square paper bag machines—good salary—permanent—Write or visit CUSTOM-MADE PAPER BAG CO., INC., 33rd St. & Skillman Ave., Long Island City, N. Y. J-7

HELP WANTED

CHARLES P. RAYMOND SERVICE
294 Washington St., Boston, Mass.
Specializing in Paper Mill Personnel
Positions Now Open

Director new research and control laboratory for pulp board manufacturing; salary at least 10,000 year
Finishing superintendent crepe cellulose production
Superintendent, also tour bosses for roofing felt mills
Chemists and chemical engineers, laboratory men
Plant engineer $5,000—6,000 year, master mechanics, plant engineers, draftsmen
Electrical engineer

We invite correspondence (strictly confidential) with employers seeking personnel and men seeking new positions. M-31

HELP WANTED—Men for Shift Chemist control work in pulp and paper mill located in the Southwest. Technical education not essential but mill experience desirable. Hiring in accordance with W.M.C. regulations. Address Box 45-309 Care Paper Trade Journal. J-14

TOUR BOSS—Experienced on fine grades of paper including Bonds and Ledgers. Able to assume full duties of tour boss. Mill located in Eastern Pennsylvania. Give resume of experience in this field. Address Box 45-313 care Paper Trade Journal. J-21

CLASSIFIED ADVERTISING

HELP WANTED—5c a word. Double rate for heavy face type. Minimum charge $1.25.

SITUATIONS WANTED—5c a word, double rate for heavy face type. Minimum charge $1.25. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—5c a word. Double rate for heavy face type. Minimum charge $1.25.

WANTED—5c a word. Double rate for heavy face type. Minimum charge $1.25.

OPPORTUNITIES—5c a word. Double rate for heavy face type. Minimum charge $1.25.

Classified advertising space may also be purchased at $3.00 per single column inch.

All classified advertisements are payable in advance.

If box number is used—35 cents additional.

Address Replies

to advertisements appearing under Box Numbers in care of

PAPER TRADE JOURNAL
15 West 47th Street
New York 19, N. Y.

HELP WANTED

SPECIALTY SALESMEN

Young, ambitious — willing to learn. Desirable that he possess background of chemical or mechanical engineering. Great opportunity for advancement in paper converting field.

Address Box 45-289 care Paper Trade Journal. J-7

PLANT ENGINEER

for two machine mill at Walloomsat Paper Mills, Inc. New York Office 25 Vanderbilt Avenue, New York, 16, N. Y. State full qualifications.

tf

Bag Machine Adjuster for Paper Bag Factory—Good Pay—40 hour week—time and half overtime. State experience. Address Box 45-312 care Paper Trade Journal. M-31

WANTED—Machine Tenders, Back Tenders, Windermen, Laster Mechanic and Millwright for cylinder machine mill. Reply to Mr. T. J. Russell, Mill Manager, Sangamon Paper Mills, Eaton, Indiana. J-21

SUPERINTENDENT for finishing department in large modern midwestern paper converting plant. Must be expert in laminating and coating of paper, plating, stack and friction calendering, and have a good chemistry background in paper and related materials. Knowledge of water-proofing of paper and application of lacquer and plastic coatings necessary. Address Box 45-210 care Paper Trade Journal. TF

SALARIED POSITIONS — This advertising service of 35 years' recognized standing negotiates for high salaried supervisory, technical and executive positions. Procedure will be individualized to your personal requirements and will not conflict with Manpower Commission. Retaining fee protected by refund provision. Identity covered and present position protected. Send for details. R. W. BIXBY, INC., 117 Delward Bldg., Buffalo, 2, N. Y. tf

WANTED—Chief Engineer to operate one machine mill in middlewest. State age and experience. Address Box 45-306 care Paper Trade Journal. M-31

WANTED—PROJECT ENGINEER and ENGINEERING DRAFTSMEN experienced in design and layout of pulp and paper mills and power plants for consulting engineering office in New York City. Address Box 45-300 care Paper Trade Journal. J-14

SALES MANAGER to supervise sales of lignin chemicals and plastics. Should have training and experience in technical selling and some knowledge of chemistry. Wisconsin location about one half time, balance traveling. MARATHON CORPORATION, Chemical Division, Rothschild, Wisconsin. M-31

WANTED — Licensed Steam Engineer. One capable of handling maintenance and operation in paper mill on Pacific Coast. Apply in own handwriting stating experience, references and salary wanted. Address Box 45-244 care Paper Trade Journal. TF

WANTED—CHIEF CHEMIST for pulp and paper mill located on Pacific Coast. Apply in own handwriting giving references, experience and other pertinent information. Address Box 45-243 care Paper Trade Journal. TF

Great Jumpin' Jehoshaphat!

"Thought I'd seen everything 'til I saw my first Hydrapulper the other day. You know, Pete, that thing stood my hair on end. It's terrific. Young feller hurled in a whole bale of mixed stock; stopped to take a chew; and it was ready for another bale. Never saw anything to equal it.

They tell me it works equally well on roll or lap pulp—fast, uniform, thorough pulping all the time.

Thing isn't big—takes very little room and requires practically no attention. But, oh boy, can it handle stock."

Have you seen your first Hydrapulper? If not, go take a look at one and talk to the mill officials. That's all we ask.

DILTS MACHINE WORKS
FULTON, NEW YORK
Shartle Bros., Middletown, Ohio
Divs.: Black-Clawson Co., Hamilton, Ohio

DILTS HYDRAPULPER

HELP WANTED

PLANT MANAGER—Established Philadelphia Plant making high quality bags (self-opening, squares, flats, sacks, specialties) want plant manager experienced in handling production and personnel in union shop. Give full qualifications. Replies held in strictest confidence. Address Box 45-196 care Paper Trade Journal. M-31

MACHINE TENDER for cylinder machine operations. Must be experienced at this particular kind of machine operations. Prefer high school graduate or equivalent. Address Box 45-293 care Paper Trade Journal. TF

LONG ESTABLISHED well financed corporation wants Chemical Engineer, experience preferred in wallboard research, who is capable of directing research control laboratory in utilization of wood waste; permanent position; our personnel advised of this ad; give full particulars; strict confidence respected. Address 45-294 care Paper Trade Journal. J-7

SITUATIONS WANTED

Development Chemist — 10 years supervisory experience in development and production of items such as coated, printed, laminated papers, films, foils, fabrics, bags, bread wraps. Address Box 45-305 care Paper Trade Journal.

J-7

SALESWORK WANTED

Young, ambitious, aggressive, college graduate. Excellent character, pleasant personality. Pulp and paper manufacturing experience. Field or office work desired.

Address Box 45-317 care Paper Trade Journal. J-7

WANTED—Millwright, full charge maintenance in wet machine mill. Up to date plant in good condition located in New England. Permanent position for right man. Address Box 45-259 care Paper Trade Journal. M-31

CHEMIST—B. S. in Chem. Graduate training in Pulp and Paper School. 10 years experience in pulp and paper mill and converting plants. Practical experience with thermoplastic and thermosetting resins and all types of adhesives. Graduate training in Management Subjects. Wishes position with a future with progressive company. Employed but available on short notice. Age 32. Classified II-B. Family. Address Box 45-298 care Paper Trade Journal. J-7

PAPER CONVERTING FOREMAN—18 years experience paper cutting, straight and die cutting. Many years successful handling of men. Seeks position Metropolitan Area. Address Box 45-276 care Paper Trade Journal. J-28

FOREMAN FINISHER—Twenty years diversified experience, proficient operator and instructor, clerical, scheduling, warehousing, shipping, inventories, etc. Resume on request. Address Box 45-318 care Paper Trade Journal. J-28

SITUATIONS WANTED

SENIOR PURCHASING AGENT open for post war position. Over 20 years experience, including 7 years with pulp and paper industry, and government contracting since start of war. Good education; sterling character. Inquiries invited. Address Box 45-290 care Paper Trade Journal. M-31

MAN 41, with 20 years supercalender and finishing experience, desires to locate from large city. Capable of handling mechanical, quality and engineering problems on supercalenders. Address Box 45-319 care Paper Trade Journal. J-14

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FOR SALE

36" Sheridan "New Model" Automatic Power Cutter.
44" Oswego hand clamp Power Cutter
44" Seybold Holyoke Auto. Power Cutter.
63" Oswego Mill Type Cutter, power back guage.
66" Clark Sheeter with Back Stand
110" Hamblet heavy duty Sheeter with backstand.
60" Rice Barton & Fales Slitter & Rewinder, for use on dry end of paper machine.
120" Moore & White 4-drum Rewinder.
36" Waldron Embosser.
4 Waldron 30" Paper Reels.

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120 West 42nd St., New York 18, N. Y.
TF

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42 Dryers consisting of 85" and 86" face—36" diameter—complete with triple deck stands, gears, bearings and piping.

One Set (70) Heat Treated Carbon Steel Flybars together with woods for a 62" diameter by 50" face Dilts Bandless Beater Roll.

EMPIRE BOX CORPORATION
Garfield, New Jersey TF

1—Holyoke Machine Co., 9 roll, 44" finishing calender stack.
Brass lined journals—hand wheel and screw adjustment. Double flanged drive wheel. Unwinding and rewinding shaft. Two spare rolls.
General Electric Co., 50 h.p., slip ring induction motor. Predetermined speed panel. Rheostat and controller. 7½ h.p. threader motor, induction type.
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1—10 lb. Noble & Wood Cycle Beater, with motor (complete in every detail).
1—Shartle Bros. Decker 36" diameter x 60" face including couch roll.
1—120" Fourdrinier Wet End.
1—68" Drilled Face Suction Press Roll.
1—#9 Emerson Jordan for direct connection to a motor, requires use of 400 H.P. motor.
1—Shartle Brothers Duplex 10 x 20 Stock Pump.
1—Moore & White 10 x 12 Triplex Stock Pump.
2—2000 lb. Holyoke Beaters.
1—1000 lb. Dayton Beater.
1—Jones pulper — direct connected to 60 H.P. motor.
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1—18 Plate Flat Screen with scraper.
1—Buffalo Pump—5500 g. p. m., direct connected to 100 H.P. Motor (50' head).
1—#4 Roots-Connersville Vacuum Pump.

Various sizes of Centrifugal Pumps. Write us regarding your particular requirements.

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2—63" Dietz Toilet Converters.

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250 Frelinghuysen Ave.
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M-31

FOR SALE

1—10"x20" Beloit Triplex Stock Pump.
1—7-Roll 49" wide Holyoke Super Calender Stack, complete with 50 H.P. G. E. a.c. 3 phase 60 cycle, 220 volt motor equipment. Machine in perfect condition.
1—54" Pusey & Jones Wet Machine, 36" diameter cylinder mould including vat.
1—Kohle & Wood Mammoth Jordan with saw shell and plug fillings.
Complete line of self-opening bag machines from ¼ to 35 lbs. Also, flat and square bag machines from ¼ to 20 lbs.
3—Beloit Triplex Plunger Stock Pumps, sizes 8" x 12", 9" x 12" and 10" x 10".
1—#2 Lanneye Pulper complete with 40 H/P A.C. motor equipment. A-1 condition.
1—48" Seybold Holyoke Power Paper Cutter
1—110" Double-Drum Waldron late type shear cut hydraulic Slitter and Rewinder.
4—1500-lb. Thorsen Hery Beaters equipped with 150 H/P A.C. motors and speed reducers.

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1—Packer Flat Screen. 10 plates 12" x 42" .015 cut.
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1—15 h.p. Reliance Motor 220-440-1750 R.P.M. Ball bearing. Used year and a half.
4—Driers—112" face x 48" diameter complete with 2 deck frames, gears, etc.
2—Norwood Engineering Co.—44" two roll platers direct connected to 15 h.p. motors.
1—60" Voith Inlet.
1—A. D. Wood Saveall—cylinder—60" face by 48" diameter—ball bearing equipped—rebuilt—specifications on request.
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1—42" Liner and combining machine. Fourteen 6" diameter steam heated rolls and one drier 24" diameter.
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2—14" x 20" Connersville Vacuum Pumps. These pumps are fully rebuilt.
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1—72" two drum Pusey & Jones Slitter & Winder will rewind 40" diam. rolls.
1—100" two drum Warren Slitter & Winder.
1—100" Two Bowl Reel—Bowls 20" diam.
1—E. D. Jones Standard Jordan with fast coupling and extended base for direct connection to motor.
1—Farrel Roll Grinder will take rolls 28" diam. 18' long. Motor equipped. 2—10 h.p. Motors. 1—16 h.p. Motor—Excellent condition. Photos on request.
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All above pumps in excellent condition.
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2—Merwood platers, 44", with reversing motors, new 1928.
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6—Rubber covered press rolls 14 x 87" and 2—14 x 84".
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2—Moore & White rotary screens
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1—60 x 80" Horne patent beater with bronze bars, 4" tub.
1—75 HP 550 volt squirrel cage motor with rheostat.
1—Sturtevant pulp shredder
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J-14

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44" Seybold Holyoke Auto. Power Cutter.
45" White Automatic Power Cutter.
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65" Clark Sheeter with Back-Stand.
80" Finley Sheeter.
110" Hamblet heavy duty Sheeter with backstand.
60" Moore & White 2-drum Rewinder.
120" Moore & White 4-drum Rewinder.
66" Rice Barton & Fales Slitter & Rewinder, for use on dry end of paper machine.
30" Waldron Embosser.
4 Waldron 36" Paper Reelers.

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FOR SALE

FOR SALE

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2—Jordans 49" plugs
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1—Shartle 8" x 18" duplex stuff pump
4—12" x 12" Gould triplex stuff pumps
1—8" x 10" Worthington triplex stuff pump

Shartle Brothers Machine Co.
Middletown, Ohio
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1—60 H.P. Fairbanks Morse Diesel Engine, connected to a 40 KVA Generator.
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GOVERNMENT BIDS

PROPOSALS

FOR FURNISHING

PAPER AND ENVELOPES FOR THE U. S. GOVERNMENT PRINTING OFFICE

SEALED PROPOSALS will be received until 10 a.m. June 11, 1945, in the room of the Joint Committee on Printing, in the Capitol, Washington, D. C., for furnishing the paper for the public printing and binding, and blank paper and plain envelopes for the use of the Government departments and establishments in the District of Columbia, for the terms of 3 months for paper and 6 months for envelopes beginning July 1, 1945, deliveries to be f. o. b. Government Printing Office Warehouse, or warehouse siding, Washington, D. C. The proposals will be opened in the presence of and the award of contracts made by the Joint Committee on Printing to the lowest and best bidders for the interest of the Government whose bids are in conformity with the requirements of the proposals. The Committee reserves the right to reject any or all bids, or to accept any bid or any part and reject the other part, if, in its opinion, such action would be in the interest of the Govenrment.

Blank proposals containing the instructions, schedule, and specifications, may be obtained by addressing A. E. Giegengack, Public Printer, Washington, D. C.

Contracts will be entered into for supplying the quantities required, whether more or less than the estimates, as provided in paragraph 15 of the proposal for paper and paragraph 13 of the proposal for envelopes.

The approximate estimated quantities set forth in detail in the schedules comprise:

PAPER

2,500,000 pounds newsprint paper; 400,000 pounds telephone booknews; 2,430,000 pounds machine-finish book paper; 4,000,000 pounds offset book paper; 150,000 pounds antique book paper; 40,000 pounds lightweight machine-finish book paper; 50,000 pounds 50% antique book paper; 1,000,000 pounds supercalendered book paper; 1,650,000 pounds machine-coated book paper; 400,000 pounds coated book; 4,300,000 pounds mimeograph paper; 450,000 pounds duplicator copy paper; 200,000 pounds U S M O safety writing paper; 19,200,000 pounds writing paper; 2,730,000 pounds map paper; 745,000 pounds manifold paper; 3,550,000 pounds bond paper; 650,000 pounds ledger paper; 2,480,000 pounds index paper; 60,000 pounds cover paper; 140,000 pounds manila paper; 700,000 pounds kraft paper; 600,000 sheets white gummed paper; 125,000 pounds blotting paper; 10,000 sheets high-finish red sulphite; 160,000 pounds tag board; 60,000 pounds manila cardboard; 10,000 sheets railroad board; 150,000 pounds tan board; 500,000 pounds wood cardboard; 3,900,000 pounds postal card paper; 30,000 sheets red pressboard; 300,000 pounds news board; 315,000 pounds binder's board; 80,000 pounds chestnut coverboard.

In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

ENVELOPES

20,200,000 kraft; 9,000,000 writing, chemical wood, white and colored; 200,000 100% writing, white; 1,110,000 25% bond, white, 275,000 100% bond, white.

By direction of the Joint Committee on Printing.

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Public Printer.

WASHINGTON, D. C.
May 28, 1945. J-7

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2—Miami #6 Jordan plugs, ⅜" duplex fillings
2—Miami #1 Jordan plugs 3/16" fillings
1—Miami #2 Jordan plug, ¼" filling or 3/16" duplex filling
2—Jones Majestic Jordan plugs, 5/16" fillings
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1—Miami #2 Jordan plug for ⅜" duplex filling
1—Air compressor, Laidlaw Dunn 700 cu. ft. 100# pressure, size 18 x 12 x 12 two-stage
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2—Sets Bolton assembled shell filling, ¼" bars, for Noble & Wood Monarch Jordan.
1—same as above, 3/16" filling
1—Bahr Bros. shell filling for Noble & Wood Pony Monarch Jordan
1—Bahr Bros. shell filling for Mammoth Jordan
1—Bahr Bros. shell filling for Miami #2 Jordan
1—Bahr Bros. shell filling for Noble & Wood Monarch Jordan
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1—Buffalo Duplex Conodial Blower, size 8
1—8-plate Packer screen
1—#2 Lannoye Pulper
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SHARTLE BROS. MACHINE CO.

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S-6

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1—Model B—40" heavy Duty Fales Slitter with 1" set of knives, guides and winding drum. Additional details and price furnished upon request.
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M-31

FOR SALE—Brownell Twin Steam Engine, 12" bore, 14" stroke, Maximum steam pressure 175 pounds. Belt wheel 66" diameter, 19" wide. In excellent condition. Ready for immediate shipment. Address Box 45-303 care Paper Trade Journal. J-14

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FOR SALE—50" Sheridan New Model Cutter in good working order. Address Box 45-320 care Paper Trade Journal. M-31

WANTED

WANTED—Brightwood Box Machine. Address Box 44-836 care Paper Trade Journal. tf

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CALENDER STOCK—10" INTERMEDIATE ROLL MINIMUM
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SHEETER—SINGLE OR DOUBLE CUT-OFF
BOTH FOR 72" MACHINE
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One (1) Laboratory Beater
Waterbury Hydraulic Drive size 6
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Capacity desired: Approximately 100,000 to 200,000 lbs. 24 hours.
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WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 44-835 care Paper Trade Journal tf

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J-7

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ABRASIVES
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Monsanto Chemical Co.
Norton Co.

ADHESIVES
American Resinous Chemicals Corp.
Arabol Mfg. Co.
National Adhesives Division of National Starch Products, Inc.
Philadelphia Quartz Co.
Stein, Hall & Co., Inc.
United States Rubber Co.

AGITATORS
Appleton Machine Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Montague Machine Co.
Moore & White Co.
Noble & Wood Machine Co.
H. K. Porter Company Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

BAG MACHINES
Thomas W. Hall Co., Inc.
Pendevin Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Weber, Herman G.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
The Moore & White Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BEARINGS
Black-Clawson Company
Jones, E. D. & Sons Co.
The Manhattan Rubber Mfg. Co
Montague Machine Works
Kelway Bearing Co.
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
SKF Industries Inc.
Timken Roller Bearing Co.
Valley Iron Works Co.
T. B. Woods' Sons Company

BEATERS & JORDANS
The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Herman Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
J. J. Ross Company
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BELTING
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co.
Graton & Knight Company
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
J. E. Rhoads & Sons
United States Rubber Co.
T. B. Wood's Sons Company
Worthington Pump & Machinery Corp.

BLEACHING APPARATUS
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
Perkins & Son, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Noble & Wood Machine Co.
Pennsylvania Salt Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Montague Machine Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company
Valley Iron Works Co.

BOTTOMS
Harrington & King Perforating Co.
Kalamazoo Tank & Silo Co.

CALENDERS
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
Waldron Corp., John

CASEIN
Packing Products Co.

CASTINGS
Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Fort Pitt Steel Casting Co., Div. H. K. Porter Company, Inc.
The Frederick Iron & Steel Co.
Grinnel Company
Hamblet Machine Co.
E. D. Jones & Sons Co.
Lobdell Car Wheel Co.
Magnus Metal Corp.
Montague Machine Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Smith & Winchester Mfg. Co.
Traylor Engineering & Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
De Laval Steam Turbine Co.
Nichols Engrg. & Research Corp.
Ross J. O. Eng. Co.
Shartle Brothers Machine Co.

CHEMICALS
Aktivin Corporation
Amer. Cyanamid & Chem. Corp.
American Resinous Chemicals Corp.
Ansul Chemical Co.
Calco Chemical Co.
Diamond Alkali o.
Dispersion Process Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Geigy Co., Inc.
Gottesman & Co.
Hooker Electrochemical Company
The Mathieson Alkali Works, Inc.
Monsanto Chemical Company
The Neville Company
National Oil Products Co.
Naugatuck Chemical Div. of U. S. Rubber Co.
Niagara Alkali Company
Paper Makers Chemical Department, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Pioneer Salt Company
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Stauffer Chemical Company
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

CLEANING MATERIALS
Amer. Cyanamid & Chem. Corp.
Bird Machine Co.
E. I. du Pont de Nemours & Co., Inc.
Oakite Products, Inc.
Paper Makers Chemical Department, Hercules Powder Co.
Magnus Chemical Co.
Nichols Engrg. & Research Corp.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp.
J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black-Clawson Company
Hudson Sharp Machine Company
Farrel-Birmingham Co.
Fawick Airflex Co., Inc.
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Stearns Magnetic Mfg. Co.
Valley Iron Works Co.
T. B. Wood's Sons Company

COATING MACHINERY
Hudson Sharp Machine Company
Moore & White Co.
Pendevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.
Worthington Pump & Machinery Corp.

CONSULTING ENGINEERS
W. H. L. D. Betz
Frederic C. Clark
Ferguson, Hardy S.
Hardy, George F.
Johnson & Wierk, Inc.
The Kohler System Company
Main, Inc., Chas. T.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.

CONTROLS
The Bristol Company

CONVEYORS
Black-Clawson Company
Murray, D. J. Mfg. Co.
Ross Engineering Corp., J. O.

CORES
Elixman Paper Co.
Senoco Products Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Walker-Goulard-Plehn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
The Frederick Iron & Steel
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
Westinghouse Electric Corporation
T. B. Wood's Sons Company

CUTTERS
Thomas W. Hall Co.
Noble & Wood Mach. Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DE-INKING
Kinsley Chemical Co.

DIGESTERS
The Bigge Boiler Works Co.
H. K. Porter Company Inc.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric Corporation

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O. Engineering Corp.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric Corporation

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrg Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co.
Geigy Co., The
General Dyestuf Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EVAPORATORS
Black-Clawson Company
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Traylor Engineering & Mfg. Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Builders-Providence, Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup
Traylor Engineering Co.
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co. Inc.
Draper Bros. Corp.
Fitchburg Duck Mills
Hurch & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Woodward, Baldwin & Co.

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Colloid Co.
Amer. Cyanamid & Chem. Corp
American Resinous Chemicals Corp.
International Pulp Co.
W. H. Loomis Talc Corp.
Union Talc Co.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Moore & White Co.
J. O. Ross Engrg. Corp.
Worthington Pump & Mchy. Corp.
Witco Chemical Co.

FLOORING, GRATING & TREADS
Hendrick Mfg. Co.
Norton Co.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

WHERE TO BUY

GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Covel-Hanchett Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Simonds Worden White Co.
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Worthington Pump & Mchy Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan Inc.
United States Rubber Co.

INSTRUMENTS, TESTING AND MEASURING
W. H. & L. D. Betz
N. P. Bowsher
The Bristol Company
Builders-Providence, Inc.
The Foxboro Company
General Electric
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taber Instrument Corp.
Taylor Instrument Cos.
Wallace & Tiernan Co., Inc.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Worden White Co.
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Valley Iron Works Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

LUBRICATORS
Hills-McCanna Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Walker-Goulard-Plehn Co.

MIXERS
Youngstown Welding & Engrg. Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corporation

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Shartle Brothers Machine Co.
Taylor Forge & Pipe Works
Walworth Company
Youngstown Welding & Engrg. Co.

PLATERS
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Dietz Machine Wks.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
Valley Iron Works Co.
Waldron Corp., John
Weber, Homer C.

PUG MILLS
Traylor Engineering & Mfg. Co.

PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Geotzeman & Co., Inc.
Elof Hansson, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
Quimby Pump Co. Div. of H. K. Porter Company, Inc.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company
Worthington Pump & Machinery Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp. J. O.
Valley Iron Works Co.

RECTANGULAR BINS
Traylor Engineering & Mfg. Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
The Brown Instrument Co.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric Corporation

RESINS
American Cyanamid & Chemical Corp.
American Resinous Chemicals Corp.
The Resinous Products & Chemical Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Rochlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Youngstown Welding & Engrg. Co.

ROLL STANDS
Cameron Machine Co.
Johnstone Eng. & Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.

ROTARY KILNS
Traylor Engineering & Mfg. Co.

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman C.

SCALES
Builders-Providence, Inc.
Marrick Scale Mfg. Co.

SCREEN PLATES
Pitchburg Screen Plate Co.
Magnus Metal Corp.
Mersey Paper Mill Supply Co.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.

SCRUBBERS
Traylor Engineering & Mfg. Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.

SIZES
American Cyanamid & Chemical Co.
American Resinous Chemicals Corp.
Black-Clawson Company
The Dow Chemical Co.
du Pont, E. I., de Nemours & Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Pioneer Salt Company
Socony-Vacuum Co.
Philadelphia Quartz Co.

SLITTERS
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Johnstone Eng. & Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SPRAY NOZZLES
The Spray Engineering Co.

STAINLESS STEEL
Eastern Stainless Steel Corp.
Industrial Steels, Inc.

STARCH
American Cyanamid & Chemical Corp.
Chinese Co.
National Starch Products, Inc.
Stein, Hall & Co., Inc.

WHERE TO BUY

STEAM SPECIALTIES
Johnson Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

STRAPPING & STRAPPING MACHINES
The Stanley Works

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Westinghouse Electric Corp.

SULPHUR
American Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS
Valley Iron Works Co.

TALC
American Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
International Talc Company

TANKS
Frederick Mfg. Co.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
The Noble & Wood Machine Co.
H. K. Porter Company Inc.
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Taylor Engineering & Mfg. Co.
United States Rubber Co.
Waldron Corp., John
Youngstown Welding & Engrg. Co.

THICKENERS, DECKERS & SAVEALLS
Bird Machine Company
Buffalo, Dunton Pulp Co. Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
E. I. Du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

TRUCKS
Elwell Parker Electric Co.
Wright-Hibbard Ind. Elec. Truck Co.

TRAPS
Armstrong Machine Works
Crane Co.
Grinnel Company
Johnson Corporation
Shartle Bros. Mch. Co.

TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric Corp.
Worthington Pump & Machinery Corp.

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Shartle Brothers Machine Co.

VALVES
The Bristol Company
Crane Company
Dilts Machine Works
The Foxboro Company
Hills-McCanna Co.
E. D. Jones & Sons Co.
Kennedy Valve Mfg. Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Permutit Company
William Powell Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company

VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WATER CONDITIONING
The Permutit Company

WAXING MACHINERY
Black-Clawson Co.
Pendevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric Corp.

WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Johnstone Eng. & Machine Co.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Pendevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

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Black-Clawson Company
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